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1	UNITED STATES DISTRICT COURT		
2	NORTHERN DISTRICT OF CALIFORNIA		
3			
4	IN RE: FACEBOOK, INC., MDL No. 2843		
5	CONSUMER USER PROFILE Case No.		
6	LITIGATION 18-md-02843-VC-JSC		
7			
8	This document relates to:		
9	ALL ACTIONS		
10	**HIGHLY CONFIDENTIAL**		
11			
12	ZOOM DEPOSITION OF FACEBOOK's 30(b)(6)		
13	CORPORATE REPRESENTATIVE - SIMON CROSS		
14	(Reported Remotely via Video & Web Videoconference)		
15	London, England (Deponent's location)		
16	Monday, June 20, 2022		
17	Volume 4		
18	REDACTED VERSION OF DOCUMENT SOUGHT TO BE SEALED		
19	STENOGRAPHICALLY REPORTED BY:		
20	REBECCA L. ROMANO, RPR, CSR, CCR		
	California CSR No. 12546		
21	Nevada CCR No. 827		
22	Oregon CSR No. 20-0466		
23	Washington CCR No. 3491		
24	JOB NO. 5281223		
25	PAGES 725 - 985		
	Daga 725		
	Page 725		

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1	UNITED STATES DISTRICT COURT		
2	NORTHERN DISTRICT OF CALIFORNIA		
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4	IN RE: FACEBOOK, INC., MDL No. 2843		
5	CONSUMER USER PROFILE Case No.		
6	LITIGATION 18-md-02843-VC-JSC		
7			
8	This document relates to:		
9	ALL ACTIONS		
10			
11			
12			
13			
14			
15	CONTINUED VIDEOTAPED DEPOSITION OF SIMON CROSS, taken		
16	on behalf of the Plaintiffs, with the deponent located		
17	in London, England, commencing at		
18	1:35 p.m., Monday, June 20, 2022, remotely reported		
19	via Video & Web videoconference before		
20	REBECCA L. ROMANO, a Certified Shorthand Reporter,		
21	Certified Court Reporter, Registered Professional		
22	Reporter.		
23			
24			
25			
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1	APPEARANCES OF COUNSEL
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APPEARANCES OF COUNSEL (cont'd)
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                 APPEARANCES OF COUNSEL (cont'd)
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15
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          Ian Chen, Associate General Counsel,
16
17
    Meta Platforms
          John Macdonell, Videographer
18
19
20
21
22
23
24
     /////
25
                                               Page 731
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5		BY MR. MELAMED	735
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7			
8		EXHIBITS	
9	NUMBER		PAGE
10		DESCRIPTION	
11	Exhibit 425	Native Excel Spreadsheet,	867
12		HC_AEO_2022-06016_In re	
13		FB-TablesColumn Names;	
14			
15	Exhibit 426	Native Excel Spreadsheet	920
16		C2_022-FB-MTHD-00080;	
17			
18	Exhibit 427	Native Excel Spreadsheet,	945
19		FB-CA-MDL-029362498;	
20			
21	Exhibit 428	Native Excel Spreadsheet,	964
22		C2_018-FB-CA-MDL-02936296.	
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1	London, England; Monday, June 20, 2022	09:04:04
2	1:35 p.m.	
3	00	
4		
5	THE VIDEOGRAPHER: We are on the record	01:35:43
6	at 1:35 p.m. on June 20th, 2022.	
7	This is the deposition of Simon Cross,	
8	Volume 4. We're here in the matter of the In Re:	
9	Facebook, Inc. Consumer Privacy User Profile	
10	Litigation.	01:35:59
11	I'm John Macdonell, the videographer with	
12	Veritext.	
13	Before the reporter swears the witness,	
14	would counsel please identify themselves, beginning	
15	with the noticing party, please.	01:36:09
16	MR. MELAMED: Good morning. My name is	
17	Matt Melamed. I'm with the law firm of	
18	Bleichmar Fonti & Auld. I represent plaintiffs.	
19	With me here presently are Adele Daniel	
20	and Emma Wright. They're from Keller Rohrback, and	01:36:20
21	they also represent plaintiffs.	
22	MR. SCHWING: This is Austin Schwing of	
23	Gibson Dunn for defendant Meta, and with me are	
24	Ian Chen, Hannah Regan-Smith, and Phuntso Wangdra	
25	and Matt Buongiorno.	01:36:46
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1	Okay. I think I got everybody.	01:36:47
2	SPECIAL MASTER GARRIE: This is	
3	Special Master Garrie on behalf of the courts.	
4	Good morning, Counsel Buongiorno. It's	
5	been a while. I hope you're healthy.	01:36:57
6	MR. BUONGIORNO: Thank you, Special	
7	Master Garrie.	
8	THE COURT REPORTER: At this time, I will	
9	ask counsel to agree on the record that there is no	
10	objection to this deposition officer administering	01:37:05
11	a binding oath to the deponent via remote	
12	videoconference, starting with the noticing	
13	attorney, please.	
14	MR. MELAMED: No objection. Thank you.	
15	MR. SCHWING: No objection for the	01:37:27
16	defendant.	
17	THE COURT REPORTER: Mr. Cross, could you	
18	raise your right hand for me, please.	
19	THE DEPONENT: (Complies.)	
20	THE COURT REPORTER: You do solemnly	01:37:45
21	state, under penalty of perjury, that the testimony	
22	you are about to give in this deposition shall be	
23	the truth, the whole truth and nothing but the	
24	truth?	
25	THE DEPONENT: I do.	01:37:45
		Page 734

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1	SIMON CROSS,	01:37:46
2	having been administered an oath, was examined and	
3	testified as follows:	
4	EXAMINATION	
5	BY MR. MELAMED:	01:37:46
6	Q. Welcome back, Mr. Cross.	
7	A. Thank you.	
8	Q. So as I mentioned, my name is	
9	Matt Melamed from the law firm	
10	Bleichmar Fonti & Auld. I'm going to be asking you	01:38:02
11	questions about the 30(b)(6) notice topics 2 and	
12	8 today, and then, as I mentioned off the record,	
13	Mr. Loeser is going to ask you a few questions	
14	about topics 6 and 7.	
15	So you understand for these topics, and	01:38:20
16	specifically for topics 2 and 8, you've been	
17	designated by Facebook to answer questions on its	
18	behalf, correct?	
19	A. That's correct.	
20	Q. Okay. And you are prepared to do so	01:38:29
21	today, correct?	
22	A. I've done my best to prepare, yes.	
23	MR. SCHWING: And, Matt, I just want to	
24	just state for the record that we have certain	
25	aspects of 2 and 8 that have been carved out for	01:38:39
		Page 735

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[
1	this witness.	01:38:42
2	MR. MELAMED: And to be clear, you're	
3	talking about questions related to targeted	
4	advertising and data brokers; is that right,	
5	Mr. Schwing?	01:38:49
6	MR. SCHWING: That is correct.	
7	MR. MELAMED: Okay.	
8	Q. (By Mr. Melamed) So, Mr. Cross, just so	
9	everybody's clear, you are not prepared to answer	
10	questions today related to targeted advertising or	01:38:58
11	data brokers; is that right?	
12	A. I have not prepared to answer questions	
13	relating to targeted advertising and data brokers.	
14	My understanding is that another witness has been	
15	designated to to cover those types of things.	01:39:12
16	Q. Okay. So for ease of reference	
17	throughout this deposition, I will likely ask about	
18	third parties generally. And is it okay for you,	
19	Mr. Cross and counsel, if when I ask those, you	
20	understand that those do not include advertisers,	01:39:32
21	data brokers, and other parties related to targeted	
22	advertising?	
23	Is that Mr. Cross, does that make	
24	sense to you? If I say "third parties," you will	
25	understand it to not include those entities for	01:39:46
		Page 736

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1	which you are not prepared to testify?	01:39:49
2	A. Yes, I think that makes sense to me.	
3	Q. And if you are unclear, please ask. And	
4	I'm not this isn't to play tricks; it's just so	
5	that I don't have to repeat a carve-out in every	01:40:01
6	question or series of questions.	
7	Understood?	
8	A. I understand, yes.	
9	MR. MELAMED: Okay. And, Mr. Schwing,	
10	same to you. If ever you believe a question	01:40:11
11	unclear because of that carve-out or you're not	
12	sure what I'm getting at, I invite you to ask me to	
13	clarify. I just want to make sure that the	
14	testimony is is clear, but I'd like to avoid	
15	having to add pause unnecessary pauses to every	01:40:24
16	question.	
17	Does that make sense to you?	
18	MR. SCHWING: It does. If we have things	
19	that need to be clarified along the way, we'll try	
20	to work that through.	01:40:37
21	MR. MELAMED: Great. Thank you.	
22	Q. (By Mr. Melamed) So as you're aware,	
23	Mr. Cross, there's a lot of material from past	
24	experience that we are going to cover. I'm going	
25	to hope to get through it as efficiently as	01:40:47
		Page 737

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1	possible. I hope you are going to do so as well.	01:40:49
2	Let's start with the description of the	
3	topics.	
4	So for topic 2, there is a subcategory A.	
5	And for that, plaintiffs are focused on the type of	01:41:00
6	data Facebook sold, made accessible to, or made	
7	available to third parties.	
8	Do you understand that?	
9	MR. SCHWING: Matt, I think you I	
10	think it was unintentional. I think you misspoke	01:41:14
11	and said "sold" instead of "shared."	
12	MR. MELAMED: Thank you. Let me repeat	
13	that.	
14	Q. (By Mr. Melamed) What type of data	
15	make sure I'm reading this correctly.	01:41:25
16	The type of data	
17	MR. MELAMED: Thank you for the	
18	correction, Mr. Schwing.	
19	Q. (By Mr. Melamed) The type of data	
20	Facebook shared, made accessible, or permitted	01:41:36
21	third parties to target. That is the stated topic.	
22	Do you understand that?	
23	A. I do understand it. I'd love to	
24	understand where the boundary comes between making	
25	available to target, because that touches on	01:41:51
		Page 738

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1	targeted advertising, and I'd like to understand	01:41:55
2	the the boundary there.	
3	Q. Okay. So for purposes of questioning	
4	today, are you prepared to answer questions on the	
5	type of user data or information Facebook shared or	01:42:07
6	made accessible to third parties, with the	
7	exception, as we spoke before, of targeted	
8	advertising and data brokers?	
9	A. I'm prepared to to talk about data	
10	made available to to third parties via the	01:42:24
11	the Graph API and the Facebook developer platform	
12	in particular.	
13	Q. Are there any other ways that Facebook	
14	made data available to third parties? And, again,	
15	here and I'll repeat this a few times until we	01:42:41
16	get in the habit this does not include to	
17	advertisers or data brokers.	
18	A. When you say sorry. Again, to be	
19	clear, when you say "data" in this context, what	
20	kind of data are we are we talking about?	01:42:55
21	Q. User data.	
22	A. So data on any particular user? "User	
23	data" meaning specifically what again? Again, I	
24	just want to be super clear.	
25	Q. I'm just asking and if you're not	01:43:10
		Page 739

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1	clear and if you're unable to answer, tell me.	01:43:12
2	I'll try to do my best to clarify.	
3	But the question is: Are you prepared to	
4	answer questions about the types of user data for	
5	user information that Facebook shared or made	01:43:21
6	accessible to third parties?	
7	A. I've done my best to prepare on that	
8	on that topic, yes.	
9	Q. And then you are also going to testify	
10	about subtopic 2C correct? which is "the	01:43:40
11	format or formats through which Facebook made user	
12	data or information accessible or available to	
13	third parties," correct?	
14	A. I'm prepared to testify on on that,	
15	again, with this this focus on the Facebook	01:44:00
16	developer platform, which is what I believe is	
17	is pertinent to this case.	
18	Q. Are there other ways that Facebook made	
19	user data available to third parties, not including	
20	targeted advertisers or data brokers? And by	01:44:15
21	"other ways," I'm speaking of other than via the	
22	Facebook platform.	
23	A. It's possible that like user data was	
24	made available to third parties over over other	
25	means. For example, attachments to emails,	01:44:33
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		I I

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1	which which would I'm not able to identify	01:44:35
2	every possible way in which Facebook over the class	
3	period has has made available information to	
4	to third parties. Like the primary way in which	
5	that was done was through the Graph API, and that's	01:44:51
6	where my my focus in being able to answer these	
7	questions have been put.	
8	Q. Okay. Just just to be clear, there	
9	may be other ways in which Facebook made user data	
10	available to third parties other than via platform,	01:45:04
11	and you are not prepared to testify about those	
12	other ways today; is that accurate?	
13	MR. SCHWING: Misstates his testimony.	
14	THE DEPONENT: I can talk at a high level	
15	about Facebook generally communicates with with	01:45:24
16	third parties using standard standard business	
17	means and practices. But it would be very hard	
18	for for me or anyone to answer questions about	
19	the totality in which Facebook has ever exchanged	
20	information with with third parties.	01:45:40
21	Q. (By Mr. Melamed) I'm not I'm not	
22	asking you to try and capture you. I'm just trying	
23	to understand the confines of what you're prepared	
24	to testify about today.	
25	So are there other ways aside you	01:45:58
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1	mentioned Facebook platform as a way that Facebook	01:46:01
2	makes user data available to third parties,	
3	correct?	
4	A. Correct.	
5	Q. You also mentioned a possibility that	01:46:09
6	user attach data could be attached to emails, and	
7	you're not prepared to testify about that manner of	
8	providing user data to third parties, correct?	
9	MR. SCHWING: No. Misstates his	
10	testimony.	01:46:18
11	THE DEPONENT: As I said, I could talk at	
12	a high level about how Facebook conducts, you know,	
13	conversations with with third parties at a high	
14	level, but it would impossible to for me or	
15	anyone to to know the totality of ways in which	01:46:39
16	Facebook, over a 15-year period, has made made	
17	data available to to third parties.	
18	Q. (By Mr. Melamed) Why would that be	
19	impossible?	
20	A. So in this context, you know, that's a	01:46:58
21	broad range in which a way of essentially thousands	
22	of people over many years have interacted with	
23	with third parties. I think having a a complete	
24	understanding of every example would be would be	
25	hard to come by.	01:47:18
		Page 742

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1	As I say, the the primary way in which	01:47:20
2	Facebook shares data with third parties is via the	
3	Facebook developer platform, and I focused my my	
4	attention there.	
5	I can talk at a high level about	01:47:30
6	typically how Facebook conducts business with third	
7	parties through with user data may have been	
8	exchanged. But, you know, I don't have a record of	
9	every email that was sent that may have contained	
10	a an Excel spreadsheet, for example, containing	01:47:45
11	user information.	
12	Q. Are there ways other than via platform or	
13	via email that you are aware of that Facebook	
14	provided user data to third parties?	
15	A. I'm not aware of any other major ways in	01:48:07
16	which Facebook would have shared data with with	
17	third parties, no.	
18	Q. Okay. I just want to be clear. You used	
19	the the phrase "major ways" in your answer to	
20	that question. Are there any other ways other than	01:48:18
21	those that you are aware of?	
22	A. Not that I'm not that I'm intimately	
23	aware of, no.	
24	Q. Are there any ways you're aware of in any	
25	way?	01:48:33
		Page 743

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1	A. No. Not that I know that Facebook has	01:48:36
2	shared data with third parties from from my	
3	conversations with with people or or my own	
4	personal experiences.	
5	Q. And let's let's return to topic 2CU,	01:49:03
6	which concerns the format or formats by which	
7	Facebook shared data with third parties shared	
8	user data with third parties.	
9	Do you understand that to be the topic?	
10	A. Yes, I understand that to be the topic.	01:49:23
11	Q. And you mentioned the Graph API is the	
12	primary way that Facebook shares user data with	
13	third parties?	
14	A. The Facebook developer platform of which	
15	Graph API is a component, yes.	01:49:36
16	Q. Okay. We're going to turn to the	
17	Facebook developer platform in a little bit.	
18	Counsel has also informed us that you are	
19	prepared to testify in a limited way about topic	
20	2d, which it concerns how Facebook insured third	01:50:09
21	parties' use of such data or information with	
22	limited to the use case; is that correct?	
23	A. That's correct. I'm prepared to to	
24	testify on on how platform integrity teams	
25	attempted to do that.	01:50:26
		Page 744

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1	Q. And then you are prepared as well to	01:50:31
2	testify about topic 8, correct?	
3	A. Would you just mind reading out just	
4	topic 8 for me so I can confirm accurately.	
5	Q. No problem.	01:50:43
6	So topic 8 concerns "the methods, tools,	
7	technologies, databases, project management tools,	
8	task lists, and other internal sources Facebook	
9	used to track third parties and data brokers."	
10	I understand that you are not prepared to	01:50:57
11	talk about data brokers, but are you prepared to	
12	talk about the rest of that topic?	
13	A. Again	
14	MR. SCHWING: Just sorry. Just	
15	quickly. And also advertisers, to the extent	01:51:07
16	that's not encompassed by data brokers as well,	
17	Matt, just to have the record clear.	
18	Q. (By Mr. Melamed) Are you prepared to	
19	talk about topic 8 with the exception of data	
20	brokers and advertisers?	01:51:20
21	A. Yes, I have done my best to prepare for	
22	topic 8.	
23	Q. And that includes the four subsections of	
24	topic 8, correct?	
25	A. Again, be useful if you'd just read them	01:51:32
		Page 745

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1	out for for extra clarity.	01:51:34
2	Q. Sure.	
3	So the first subtopic is "the type and	
4	purpose of data and information Facebook received	
5	from third parties."	01:51:43
6	And to clarify, that does not include	
7	from advertisers or data brokers.	
8	Are you prepared to answer that subtopic?	
9	A. I've done my best to prepare for	
10	subtopic, yes.	01:51:55
11	Q. And topic b, "the type and purpose of	
12	data and information Facebook provided to third	
13	parties"?	
14	A. Yes, I've done my best to prepare for	
15	that subtopic too.	01:52:05
16	Q. And "payments consideration, including	
17	actual payments and consideration or promised	
18	payments and consideration that Facebook provided	
19	or received for engaging in exchanges of user data	
20	with third parties" again, for clarity, not	01:52:20
21	including advertisers and data brokers.	
22	Are you prepared to answer on that topic?	
23	A. I've done my best to prepare for that	
24	topic too that subtopic too, yes.	
25	Q. And then the final subtopic is "any	01:52:33
		Page 746

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1	evaluation of benefits through Facebook of the	01:52:34
2	information provided or received or engaging in	
3	exchanges of user data."	
4	Are you prepared to testify about that	
5	topic today?	01:52:44
6	A. I have done my best to prepare for that	
7	subtopic, too.	
8	Q. Do you have any notes to help with your	
9	testimony today?	
10	A. I prepared a couple of pages of	01:53:00
11	handwritten notes, yes.	
12	Q. Okay. And you intend to use those to	
13	help you testify?	
14	A. Potentially. It depends on the on the	
15	questions I'm asked to answer.	01:53:07
16	Q. You said you personally prepared those	
17	notes?	
18	A. That's correct.	
19	Q. And how how did you go about preparing	
20	those notes?	01:53:24
21	A. Those notes are written from my my	
22	notes from the conversations I've with people to	
23	prepare for today and some of documents I've read.	
24	Q. Conversations with whom?	
25	A. I had a number of conversations with	01:53:45
		Page 747

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1	with Facebook employees to prepare for this for	01:53:46
2	the deposition today. I can give you their names	
3	if if required.	
4	Q. Would you please give me their names.	
5	A. Sure. I spoke to Steven Elia. I spoke	01:53:58
6	to Chad Heaton. I spoke to Tina Cardaci. And I	
7	spoke to some of these names I forgot now, but	
8	I I could get for you if needed.	
9	Q. What would you do to get their names	
10	for for us today?	01:54:30
11	A. Look at my calendar. Look at my Outlook	
12	calendar.	
13	Q. And what did you speak to Mr. Elia about?	
17	Q. Anything else?	
18	A. Those are the primary topics we I	
19	discussed with Steven.	
20	Q. You said they're the primary topics. Did	01:55:06
21	you discuss anything else with Mr. Elia?	
22	A. I don't recall discussing anything else	
23	with Steven beyond the the topics I was required	
24	to to prepare for today.	
		Page 748

Q. Anyth	ning else with Mr. Elia?	
A. That	's about the limit of what I recall	01:55:54
discussing with	n Steven.	
Q. I jus	st want to note that you as you're	
answering these	e questions, there are a lot of	
qualifiers, whi	ich is fine, and I'm just asking for	
clarification v	when you provide those qualifiers.	01:56:08
So yo	ou said "it's about the limit" of	
what you discus	ssed with Steven. Do you recall	
discussing anyt	thing else with Mr. Elia?	
A. As I	sit here today, that's what I recall	
discussing with	n Steven.	01:56:22
Q. Okay.		
What	did you discuss with Mr. Heaton?	
A. We di	iscussed a particular document which	
I believe has h	peen marked for the use of it today.	
Q. Do yo	ou recall which document that was?	01:56:36
		Page 749

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1	A. I don't recall the Bates number	01:56:43
2	particularly, no. It was a document to do with the	
3	platform and interpreting its value to third-party	
4	developers.	
5	Q. Why did you discuss that document with	01:56:55
6	Mr. Heaton?	
7	MR. SCHWING: And I would just caution	
8	the witness not to reveal any attorney-client	
9	privilege information.	
10	If you answer without doing that, you may	01:57:06
11	do so.	
12	THE DEPONENT: My understanding is that	
13	it was a document marked for for exhibition	
14	today by by the plaintiffs, and I wanted to	
15	speak to Mr. Heaton to attempt to understand his	01:57:20
16	understanding of the of the document and how it	
17	was created.	
18	Q. (By Mr. Melamed) Was it a document that	
19	you understand Mr. Heaton to have created?	
20	A. I understand Mr. Heaton to have been	01:57:35
21	involved in its creation, but I can't say for	
22	certain whether or not he was the creator.	
23	Q. And Mr. Heaton is somebody who is still	
24	employed at Facebook?	
25	A. My understanding is that Mr. Heaton is	01:57:49
		Page 750

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1	is still employed by Facebook.	01:57:52
2	Q. And what is his role at Facebook?	
3	A. I'm not certain of what his role is	
4	today, I'm afraid.	
5	Q. Do you understand what his role was	01:58:02
6	around the time that he was involved in creating	
7	the document that he reviewed?	
8	A. My understanding is he had some role	
9	in in finance or business planning, but I	
10	wouldn't want to give any more specifics than that.	01:58:16
11	Q. Why wouldn't you want to give me more	
12	specifics than that regarding his role?	
13	A. That's the understanding I have as I	
14	as I sit here today. I have not reviewed his	
15	internal profile or work history, for example.	01:58:41
16	Q. How long did you speak to Mr. Heaton?	
17	A. I spoke to Mr. Heaton for about 25	
18	minutes.	
19	Q. How long did you speak to Mr. Elia?	
20	A. I speak to Mr. Elia for around 55	01:58:58
21	minutes.	
22	Q. You mentioned you spoke to somebody whose	
23	name I don't think I caught, and I don't want to	
24	get it wrong, so please correct me. I think it was	
25	Ms. Cardaci?	01:59:14
		Page 751

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1	A. I spoke to Tina Tina Cardaci.	01:59:16
2	Q. Can you spell her last name just so we	
3	have it clearly for the record, please.	
4	A. I'll do my best. I I may get it	
5	wrong. Cardaci, C-A-R-D-A-C-I, I believe.	01:59:28
6	Q. And what did you speak to Ms. Cardaci	
7	about?	
8	A. I spoke to Ms. Cardaci about another	
9	document which I believe plaintiffs have identified	
10	to be exhibited today.	01:59:50
11	Q. And do you recall which document that	
12	was?	
24	Q. And why did you speak to Ms. Cardaci	
25	about that document?	02:00:45
		Page 752

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1	A. My understanding is this is a document	02:00:49
2	that was potentially marked for being exhibited	
3	today, and I I wanted to understand the context	
4	behind its creation and content.	
5	Q. Why did you speak to her about this	02:01:01
6	document's creation and content?	
7	A. My understanding is she was either the	
8	author or involved in the authorship of this	
9	document.	
10	Q. Do you know what her role was around the	02:01:15
11	time of the creation of this document?	
12	A. My understanding she was in some some	
13	kind of business planning operations function.	
14	Q. Did Ms. Cardaci understand help you	
15	understand the meaning of the document that you	02:01:36
16	reviewed with her?	
17	A. I believe my understanding of the	
18	document improved after speaking with her.	
19	Q. And do you have notes reflecting your	
20	conversation with her about that document?	02:01:52
21	A. I don't have any notes relating to that	
22	conversation.	
23	Q. And your conversation with Mr. Heaton,	
24	did that help improve your understanding of the	
25	document you reviewed with him?	02:02:06
		Page 753

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1	A. I believe that helped me understand the	02:02:10
2	document better, yes.	
3	Q. And how long did you speak to	
4	Ms. Cardaci?	
5	A. I think about 25 minutes again.	02:02:19
6	Q. Do you have notes regarding your	
7	understanding of either of the two documents we've	
8	just discussed? And by "the two documents," I mean	
9	the one you spoke about with Mr. Heaton and the one	
10	you spoke about with Ms. Cardaci.	02:02:43
11	A. No, I do not have notes relating to my	
12	my conversation with them.	
13	Q. Do you have any notes about the documents	
14	at all, whether whether or not those notes	
15	relate to your conversations with them?	02:02:54
16	A. I do not have notes relating to those	
17	documents, no.	
18	Q. Who else did you talk to in preparation	
19	for today's testimony?	
20	A. I spoke to Mark Molaro I think that's	02:03:10
21	right. Molaro, I think, is probably accurate. I	
22	spoke to him too.	
23	Q. Why did you speak to Mr. Molaro?	
		Page 754

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5	Q. Do you have any understanding of the time	02:05:27
6	period when Mr. Molaro was involved in the	
7	capabilities tool at Facebook?	
8	A. I don't have that level of detail of	
9	understanding. My understanding is he's a he's	
10	a data scientist on the platform team and so may	02:05:40
11	have been involved from the beginning of his his	
12	role on that team to today. But I'm not sure of	
13	exactly what his what time that is.	
14	Q. Do you know when he started on the data	
15	science team on platform?	02:05:54
16	A. As I sit here today, I don't have the	
17	exact date of of his work history, no.	
18	Q. Do you have a general understanding of	
19	when he started in that role?	
20	A. My understanding is he started at least	02:06:08
21	before 2019, but I I'm not sure again, sure	
22	of the exact dates.	
23	Q. About how long did you talk to Mr. Molaro	
24	for?	
25	A. I talked to Molaro, Mr. Molaro, over a	02:06:24
		Page 756

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1	few sessions. Hard to give an exact amount of	02:06:27
2	time. I'd estimate spending probably 30 to 60	
3	minutes with Mark.	
4	Q. Do you have any written notes reflecting	
5	your conversations with Mr. Molaro?	02:06:50
6	A. I have taken some notes about my	
7	conversation with my conversations with	
8	Mr. Molaro.	
9	Q. And those notes pertain to the	
10	capabilities tool?	02:07:03
11	A. Those notes pertain to to parts of the	
12	capabilities tool and other other work he was	
13	involved in.	
14	Q. What else do the notes concern?	
15	A. I took some notes regarding some of the	02:07:23
16	more modern logging apparatus that Facebook has	
17	today.	
18	Q. Is that a singular modern logging	
19	apparatus or are there multiple modern logging	
20	apparatuses that you're referencing?	02:07:46
21	A. Facebook has many different systems	
22	for for logging things, and there in logging	
23	the platform system, there will be multiple	
24	multiple systems involved. We talked through a	
25	particular set of data logging structure which was	02:08:08
		Page 757

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1	built more recently.	02:08:14
2	Q. What was that particular set of data	
3	logging structure built more recently that you	
4	spoke to Mr. Molaro about?	
5	A. I spoke to Mr. Molaro about some logging	02:08:28
6	infrastructure that's known as the "Can and Did	
7	tables."	
8	Q. Is that C-A-N and D-I-D tables?	
9	A. That's correct, C-A-N and D-I-D.	
10	Q. Do those stand for anything or are they	02:08:44
11	just stand-alone terms?	
12	A. My understanding is they're stand-alone	
13	terms.	
14	Q. Can you describe what the Can table is?	
15	A. I'll do my my best. My understanding	02:08:57
16	is that the Can table attempts enumerate the	
17	information that a Facebook platform application	
18	could access or can have access to.	
19	Q. Does that include the user Facebook	
20	user information that a platform application could	02:09:25
21	have access to?	
22	A. My understanding is it it it	
23	enumerates the the nodes and fields that a	
24	Facebook platform application could have access to,	
25	some of which may include user information.	02:09:43
		Page 758

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1	Q. Do you know when the Can table was	02:09:51
2	created as a tool to provide such logging?	
3	A. My understanding it was built in around	
4	2019 and became operational sometime in 2020.	
5	Q. Do you know if it contains information	02:10:10
6	dating from before it became operational?	
7	A. I do not know if it contains information	
8	relating to before it became available.	
9	Q. Who would know the answer to that	
10	question?	02:10:25
11	A. I would ask Mr. Molaro.	
12	Q. Do you know whether the Can table could	
13	have technologically been created before 2019 or	
14	2020?	
15	A. Can you help me understand what you mean	02:10:56
16	by	
17	THE DEPONENT: Sorry, Austin. You were	
18	going to say something?	
19	MR. SCHWING: Just object to form.	
20	Go ahead go ahead, Simon, if you	02:11:02
21	wanted to clarify something.	
22	THE DEPONENT: Yeah. Can you clarify	
23	what you mean by "could technologically have been	
24	created"?	
25	Q. (By Mr. Melamed) Was the Can table	02:11:12
		Page 759

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1	created let me withdraw that and restate it.	02:11:14
2	Was there new technology that became	
3	available that enabled Facebook to create the Can	
4	table in or around the time that it became	
5	created that it was created?	02:11:28
6	MR. SCHWING: Object to form.	
7	THE DEPONENT: The development of these	
8	logging systems themselves would be I would	
9	classify as new technology because they involved	
10	code being written.	02:11:46
11	Q. (By Mr. Melamed) Was there anything that	
12	prevented the code that was written for the Can	
13	table from being written at an earlier point in	
14	time?	
15	MR. SCHWING: Object to form.	02:12:01
16	THE DEPONENT: These these tables deal	
17	with large amounts of information or potentially	
18	deal with large amounts of information, and compute	
19	and storage power in the past was was less than	
20	it is today. And so it's it wouldn't have been	02:12:18
21	possible to to build these tables in the form	
22	they're in today in you know, it is in the past.	
23	Q. (By Mr. Melamed) When did the computing	
24	and storage power become sufficient to support	
25	the the tables that comprise the Can table?	02:12:46
		Page 760

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1	MR. SCHWING: Object to form. Outside	02:12:54
2	the scope.	
3	THE DEPONENT: The that's a hard	
4	question, I think, for for anyone to answer,	
5	because the the information that's contained in	02:13:04
6	them or or the processing required to create	
7	them, there's there's no like one point in time	
8	where they would have suddenly become possible.	
9	Data infrastructure and technology has been	
10	continually improving over time.	02:13:24
11	Q. (By Mr. Melamed) Would it have been	
12	possible to have created the Can tables at any time	
13	prior to when they were created, which I believe	
14	you said was 2019?	
15	MR. SCHWING: Object to form.	02:13:47
16	THE DEPONENT: Again, like it's a	
17	hard hard question to answer. They they	
18	could have been created in a in a different form	
19	earlier. Like yeah, I'm just not sure I can	
20	I can answer that question in in any way. It	02:14:05
21	would be me speculating as to the compute processes	
22	required and and Facebook's data infrastructure	
23	capabilities at at the time. That's just	
24	that's a level of detail, I think, is is hard	
25	for me to answer, I'm afraid.	02:14:20
		Page 761

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1	Q. (By Mr. Melamed) If you wanted to	02:14:22
2	understand better the answers to that question, who	
3	would you ask?	
4	A. Again, my first point of call would be	
5	Mr. Molaro, who seems to be knowledgeable on these	02:14:35
6	matters.	
7	Q. Going back to the content of Can table,	
8	you mentioned that it's it identifies which	
9	platform apps can have access to to certain	
10	types of data; is that correct?	02:14:59
11	A. My understanding is that the the Can	
12	tables attempt to enumerate the information that a	
13	platform app has access to.	
14	Q. How does the Can table index the	
15	information that a platform app has access to?	02:15:23
16	A. My understanding is that are there is a	
17	script that runs every day that enumerates through	
18	platform API nodes and methods and attempts to	
19	determine whether or not an app would be able to	
20	access the information provided by those methods.	02:15:51
21	Q. So would it be possible for somebody at	
22	Facebook to look at whether a particular app had	
23	access to a particular method at a point in time	
24	since the Can table has been implemented?	
25	A. My understanding is that's the intent	02:16:17
		Page 762

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1	of of the technology, although there are likely	02:16:19
2	caveats and details as to what's possible that	
3	that I'm that I'm not aware of. In in	
4	preparation for testimony today, I did my best to	
5	understand these systems at a high level. So	02:16:34
6	that's a question I I don't think I'm able to	
7	to answer for you, I'm afraid.	
8	Q. All right. If you wanted to provide a	
9	more full answer to that question, would you ask	
10	Mr. Molaro?	02:16:51
11	A. Mr. Molaro would be one of the people I	
12	would ask to speak to for for more specific	
13	information.	
14	Q. Who else would you ask to speak to for	
15	more specific information?	02:17:02
16	A. I would start with Mark.	
17	Q. Is there anybody else that that you	
18	come to mind who you would speak to other than	
19	Mr. Molaro?	
20	A. At this point, no. I would start with	02:17:18
21	Mr. Molaro and go from there.	
22	Q. Do you have any understanding of why the	
23	Can table was developed?	
24	A. My understanding is that the Can table	
25	was developed to in response to some obligations	02:17:38
		Page 763
		ı

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1	in in regards to the FTC consent decree.	02:17:45
2	Q. Is that the consent decree as modified in	
3	2019?	
4	A. I'm I'm not sure specifically exactly	
5	which one it was referring was was the	02:17:57
6	results of the sorry. Let me answer that	
7	question.	
8	I'm not exactly which version of the FTC	
9	consent decree triggered the the work to create	
10	these tables.	02:18:11
11	Q. Who would you ask to find out which	
12	version of the FTC consent decree triggered the	
13	creation of the Can and Did tables?	
14	A. I would, again, start with Mr. Molaro.	
15	Q. What is your understanding of the Did	02:18:35
16	table? What is the function of the Did table?	
17	A. My understanding of of the Did table	
18	or the Did tables is that they attempt to identify	
19	the information which a Facebook platform	
20	application has accessed.	02:18:57
21	Q. Do you know when the Did tables were	
22	created?	
23	A. My understanding is they were they	
24	were built in 2019 and began to come online in	
25	in 2020.	02:19:15
		Page 764

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i		
1	Q. Were the Can and Did tables created as	02:19:21
2	part of the same let me withdraw that.	
3	What was impetus for the creation of the	
4	Did tables?	
5	A. My understanding is is similarly that	02:19:40
6	the the Did tables were a response to some	
7	enhanced logging requirements and were an update to	
8	previous platform logging infrastructure.	
9	Q. Do you know if the Did tables could have	
10	been created before they were created?	02:20:07
11	MR. SCHWING: Object to form.	
12	THE DEPONENT: Again, similar to my	
13	answer with the with the with the Can tables,	
14	I'm not intimately involved in in understanding	
15	of their complexity or the resources required to	02:20:28
16	create them, and so I I I don't feel like	
17	that's an answer a question I can I can	
18	answer.	
19	Q. (By Mr. Melamed) Who would you ask if	
20	you wanted to know the answer to that question?	02:20:40
21	A. Similar to my previous answers, I would	
22	start with Mr. Molaro and and see if those	
23	questions were answerable by him or even answerable	
24	at all.	
25	Q. Is sorry. Let me withdraw that.	02:21:00
		Page 765

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1	Do you have any understanding of how the	02:21:08
2	Did tables work?	
3	A. I have	
4	MR. MELAMED: Let me restate that.	
5	That's a terrible question.	02:21:16
6	Q. (By Mr. Melamed) Do you have any	
7	understanding of how Facebook users inside at	
8	Facebook could could use the Did tables to find	
9	information?	
10	MR. SCHWING: Object to form.	02:21:29
11	THE DEPONENT: I I understand that	
12	certain Facebook employees would be able to query	
13	those tables using internal data querying	
14	infrastructure. The way in which they queried	
15	those tables would be or could be in numerous ways.	02:21:50
16	Q. (By Mr. Melamed) Do you know whether	
17	they could query the Did tables by app to	
18	understand all of the user information that an app	
19	did access during the period of times time for	
20	which the table exist?	02:22:11
21	A. I I my understanding is that these	
22	tables do contain an app ID and and therefore	
23	that's theoretically possible, but I have not	
24	queried the table myself, and so I'd be speculating	
25	as to exactly what what's possible with these	02:22:32
		Page 766

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1	tables.	02:22:34
2	Q. Do you understand whether the Did table	
3	could be queried by the type of information	
4	accessed so that somebody could determine all of	
5	the apps that determined that accessed a	02:22:49
6	particular type of information?	
7	MR. SCHWING: Object to form.	
8	THE DEPONENT: Yeah, I'm I'm not	
9	familiar with the precise structure of those	
10	tables, so I'd be speculating as to as to	02:23:02
11	exactly what what is possible with them.	
12	Q. (By Mr. Melamed) And who would you ask	
13	to figure out what was possible in terms of	
14	querying the Did table tables?	
15	THE DEPONENT: Similar. I would start	02:23:19
16	with Mr. Molaro and see where he goes from there.	
17	Q. (By Mr. Melamed) Prior to the creation	
18	of the Did tables, did Facebook use any method to	
19	track the user information that apps did access?	
20	MR. SCHWING: Object to form.	02:23:43
21	THE DEPONENT: Facebook has a number of	
22	systems for logging API usage, and those logs would	
23	identify which API calls an app made and would	
24	include the method that was called, and and that	
25	could in some cases be linked to type of	02:24:15
		Page 767

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1	information.	02:24:19
2	So those those form of logging did	
3	exist previously.	
4	Q. (By Mr. Melamed) So in that answer you	
5	talked about API calls and method calls, correct?	02:24:29
6	A. I likely mentioned API calls and methods,	
7	yes.	
8	Q. Are you aware of any tracking that	
9	existed before the Did tables that tracked the	
10	information that was returned when an API call was	02:24:52
11	made?	
12	A. I'm not aware, as I sit here today, of	
13	of any system which tracked the response the	
14	detail response to an API request.	
15	Q. In preparing for today, did you	02:25:17
16	investigate whether there existed any system that	
17	tracked the response to API requests?	
18	A. Yes. I spoke to Mr. Molaro and Mr. Elia	
19	about whether or not we logged API responses.	
20	Q. And the answer was that Facebook did not	02:25:48
21	log API responses?	
22	A. My understanding is that there was	
23	there's not there's no API API responses were	
24	not regularly logged as part of the standard	
25	platform logging infrastructure.	02:26:04
		Page 768

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1	Q. Were they ever logged as part of the	02:26:12
2	logging infrastructure?	
3	A. It's hard were they were they ever	
4	logged over which time period? Like ever?	
5	Q. During during the time period at issue	02:26:30
6	in this case. And as a general matter going	
7	forward for for the questions today, if you	
8	don't understand, please clarify.	
9	A. Sure.	
10	Q. But as a general matter, my questions	02:26:38
11	will be from 2007 to present.	
12	And so here we're talking about 2007 up	
13	until the creation of the Did tables.	
14	Were API responses ever logged between	
15	2007 and the creation of the Did tables?	02:26:58
16	MR. SCHWING: Object to form.	
17	THE DEPONENT: It's it's possible that	
18	an engineer or data scientist may have implemented	
19	logging for a debugging, for example, or or	
20	or some other form of investigation.	02:27:18
21	But from talking to the people who who	
22	know this infrastructure well, API responses were	
23	not routinely logged or stored.	
24	Q. (By Mr. Melamed) Were API calls	
25	routinely logged prior to creation of the Can	02:27:40
		Page 769

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1	tables?	02:27:44
2	A. The infrastructure to log API calls will	
3	have evolved and changed over time, so hard to give	
4	a comprehensive answer of all parts of the of	
5	the time period. But broadly, from my involvement	02:28:02
6	in platform, yes, API calls were were logged in	
7	in various forms.	
8	Q. When did you become first let me	
9	withdraw that.	
10	When on what date are you first aware	02:28:22
11	that API calls were routinely logged?	
12	A. I'm not sure of the precise date as to	
13	which Facebook began logging API calls. Again,	
14	the the information the the logging	
15	infrastructure will have and did change	02:28:46
16	significantly over the kind of 15-year year	
17	period that you're asking about.	
18	Q. Are you aware of how API calls were	
19	logged in 2007?	
20	A. I'm not aware precisely how API calls	02:29:01
21	were logged in 2007.	
22	Q. Were API calls regularly logged in 2007?	
23	A. I don't know whether or not API calls	
24	were logged routinely in 2007.	
25	Q. Who would know that information?	02:29:22
		Page 770

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1	A. I'm not sure who would know that	02:29:28
2	information. The data infrastructure that	
3	Facebook has has changed significantly over time,	
4	and many of the people involved in in building	
5	it back then would no longer be at the company. In	02:29:38
6	fact, I'm not aware of many people who are still at	
7	the company from back in that time.	
8	Q. Were API calls regularly logged in 2008?	
9	A. I don't know for certain whether API	
10	calls were regularly logged in 2008.	02:29:56
11	Q. Who would know whether API calls were	
12	regularly logged in 2008?	
13	A. Similar to my previous answer, I'm not	
14	sure who would know. I would ask the I would	
15	start by asking the data science team to see if	02:30:13
16	they knew that or the answer to that question,	
17	which is a relatively specific question.	
18	Q. Who on the data science team would you	
19	ask?	
20	A. At this point, I would start with Mark	02:30:28
21	Molaro, similarly, and see if he knew or knew the	
22	right person.	
23	Q. Were API calls regularly logged in 2009?	
24	A. Similarly, I'm I'm unaware of whether	
25	or not API calls were regularly logged in 2009.	02:30:49
		Page 771

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1		
1	Q. Were API calls regularly logged in 2010?	02:30:55
2	A. I am unaware as I'm not I'm not	
3	fully confident in whether or not API calls were	
4	logged in in 2010. This is when the beginning	
5	of my involvement with platform begins, and I	02:31:15
6	recall again, in a personal capacity how I	
7	recall like seeing information about API calls	
8	being made by apps, but the precise nature of what	
9	was logged and and when that began is is not	
10	something I am able to testify about today.	02:31:36
11	Q. What were the tools you recall	
12	encountering in 2010 that reflected API calls?	
13	A. I recall a tool called Page Stats, but I	
14	want to be I want to be clear here that this is	
15	a long time ago, and it's hard to be for me to	02:32:03
16	be confident that I was involved in viewing	
17	platform logging in in late 2010. I joined the	
18	company in September. So I I'm not sure I can	
19	give a confident answer to that.	
20	Q. What kind of information did Page Stats	02:32:27
21	reflect?	
22	A. I don't recall exactly what what	
23	information Page Stats would have would have	
24	would have requested would have stored.	
25	Q. Did Page Stats reflect information on an	02:32:46
		Page 772

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1	app-by-app basis?	02:32:52
2	A. Again, I I'm not entirely confident in	
3	how Page Stats worked or the information that was	
4	contained in it, and so I'd be speculating, I'm	
5	afraid.	02:33:06
6	Q. Does the information that was retained in	
7	Page Stats from 2010 sorry. Let me withdraw	
8	that and restate it.	
9	Was the information that was reflected in	
10	Page Stats in 2010 retained by Facebook?	02:33:21
11	A. I'm not aware exactly what information	
12	from legacy logging systems has been retained and	
13	what hasn't. Again, that answer I did plenty of	
14	work to prepare for today's testimony. That's a	
15	that's a very detailed question that I'm afraid I	02:33:44
16	can't give an accurate answer to today.	
17	Q. Were API calls regularly logged in 2011?	
18	A. Again, I I can't confidently say what	
19	was being logged in in 2011, but my recollection	
20	from the time is that, yes, API calls were being	02:34:07
21	logged in in some way.	
22	Q. What is your recollection of the way in	
23	which API calls were being logged in 2011?	
24	A. My understanding is that API calls were	
25	being logged in to a data warehouse, now known as	02:34:30
		Page 773

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1		
1	Hive, and there was another system that came into	02:34:41
2	existence, but I'm unclear exactly when.	
3	Q. What is the other system that you're	
4	that you're referring to?	
5	A. The other system I recall using to query	02:34:55
6	API calls was is a system called Scuba. But	
7	exactly when Scuba became came online and its	
8	relation to these other tools is not something I	
9	have a detailed lineage of, I'm afraid.	
10	Q. Do you know whether the information	02:35:17
11	reflecting API calls that were recorded in Hive	
12	exist for the entirety of the time that that let	
13	me withdraw that and restate it.	
14	Has Facebook retained all the information	
15	in Hive regarding API calls?	02:35:40
16	MR. SCHWING: Object to form. Outside	
17	the scope.	
18	THE DEPONENT: Again, I'm not I'm not	
19	sure exactly what Facebook has retained from which	
20	systems across a 15-year across a 15-year time	02:35:55
21	period.	
22	This data retention and storage is is	
23	a very special subject. I prepared to testify at a	
24	high level on these on these topics, but that	
25	level of detail is something I I don't have on	02:36:10
		Page 774

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1	hand today, I'm afraid.	02:36:14
2	Q. (By Mr. Melamed) Okay. If you wanted to	
3	see the API calls that a particular app made in	
4	2011, do you know if you could do that?	
5	A. I do not I do not know if that could	02:36:23
6	be done.	
7	Q. And who would you ask whether that can be	
8	done?	
9	A. I would I would ask Mr. Molaro, again,	
10	as to whether or not I was that was possible	02:36:35
11	or or or achievable.	
12	Q. And you said you're not sure of well,	
13	let me let me ask this as a question.	
14	What was the difference between the API	
15	call information that was stored in Hive and the	02:36:51
16	API information that was stored in Scuba?	
17	A. There's likely numerous differences which	
18	I I would not be able to enumerate all of the	
19	differences. One common difference is that the	
20	information stored in Hive became available several	02:37:08
21	days, one or two, after the actual APIs were being	
22	called, whereas Scuba allowed a more real-time view	
23	into into what apps were doing.	
24	Q. Let me return quickly to a question about	
25	the Can and Did tables.	02:37:35
		Page 775

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1	Where in Facebook's data infrastructure	02:37:39
2	are the Can and Did tables stored?	
3	A. My understanding is they're stored in	
4	Facebook's Hive data warehouse.	
5	Q. Do you know if they have a different name	02:38:08
6	within the Hive data warehouse, a particular table	
7	name other than the "Can" and "Did"?	
8	A. Those those tables probably the	
9	names of those tables will contain other other	
10	words and terms which I'm not fully familiar with.	02:38:24
11	So, yeah, the names of the tables are likely	
12	more more descriptive.	
13	Q. But you're not aware of them, of what	
14	those names are, as you sit here today?	
15	A. I don't recall the specific and full	02:38:39
16	names of those tables, no.	
17	Q. I think we left off at 2011 where I'd	
18	asked whether API calls from a particular year	
19	were were tracked.	
20	Is that is that your recollection too?	02:39:08
21	A. My my understanding is that in	
22	in it's likely that API hits were being tracked	
23	in some form in 2011, but in precisely what form,	
24	I I don't recall, as I might be speculating.	
25	Q. Is there a difference between the term	02:39:28
		Page 776

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1	"API hit" on one hand and the term "API call" on	02:39:30
2	another?	
3	A. Generally, the term "API hits" and "API	
4	calls" are synonymous and would typically be used	
5	interchangeably.	02:39:48
6	Q. And what what do those terms	
7	reference?	
8	A. Those terms reference where where an	
9	application, which could be a first-party or a	
10	third-party application, for example, make a	02:40:06
11	request to Facebook's API.	
12	Q. Would an application have to receive	
13	approval or let me withdraw that.	
14	Would an application have to receive	
15	permission from Facebook before making an API call?	02:40:23
16	A. Not necessarily. The API exists as as	
17	a server on the Internet, and it's possible to call	
18	those APIs without some form of authentication.	
19	But the information returned most likely in that	
20	circumstance would would be an error. It	02:40:56
21	depends on exactly the form of API call that's	
22	being made and exactly what what information is	
23	supplied at request time is a a degree of ways	
24	that that works.	
25	Q. You mentioned that an API that was called	02:41:17
		Page 777

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1	without some form of authentication would likely	02:41:26
2	return an error; is that right?	
3	A. Well, the there are there are many	
4	ways there's lots of different APIs. I think	
5	their exact behavior differs from API to API, and	02:41:42
6	the response provided will differ from API to API,	
7	and the information required to be provided by the	
8	third-party developer in order to get a successful	
9	response will also change from API method to API	
10	method.	02:42:06
11	Q. If an error was returned as a result of	
12	an API call, what form would that error take? Is	
13	there a common form that that error would take?	
14	A. There are two common ways in which APIs	
15	generally signal error states. The first is an	02:42:30
16	HTTP error code, and the second is returning an	
17	error object as part of the API response.	
18	Q. Can you be more specific about each of	
19	those? Like what the HTTP error code say?	
20	A. There's a list of standard HTTP error	02:42:55
21	codes provided by the W3c, and an API provider	
22	would generally emit an API code sorry an	
23	HTTP error code that indicates the type of error	
24	that the API had encountered.	
25	Q. You said a an API provider would	02:43:23
		Page 778

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1	typically use one of these standard HTTP HTTP	02:43:31
2	error codes. Did Facebook generally I'm sorry.	
3	Did Facebook respond with these typical	
4	HTTP error codes when a standard error code was	
5	That question got very messed up. Let me	02:43:56
6	restate it.	
7	Did HTTP did Facebook use the standard	
8	HTTP error codes in response to calls that were not	
9	permitted?	
10	MR. SCHWING: Object to form.	02:44:20
11	THE DEPONENT: Again, the Facebook APIs	
12	have have changed in in form over over the	
13	time period we're talking about here, and the error	
14	returned would differ. The way errors would be	
15	expressed would differ depending on the the type	02:44:41
16	of API being used or the API being used and and	
17	the method and how it had been implemented.	
18	My recollection is that that the	
19	that the Facebook that the Facebook APIs over	
20	time would have emitted HTTP error codes in some	02:44:56
21	cases as one way of signaling errors.	
22	I recognize the answer is is is	
23	heavily is a little complex, but the the	
24	my understanding is at times HTTP error codes will	
25	have been one of the ways in which some Facebook	02:45:23
		Page 779

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1	APIs signaled error states.	02:45:26
2	Q. (By Mr. Melamed) At those times, were	
3	the HTTP error codes the typical HTTP error codes?	
4	A. Again	
5	MR. SCHWING: I'm sorry. Object	02:45:38
6	object to form.	
7	Go ahead, Simon.	
8	THE DEPONENT: Similarly, it it's hard	
9	to give a full and complete answer there because of	
10	the number of APIs that existed and how they	02:45:50
11	changed over time.	
12	It would typically be a good practice for	
13	an engineer implementing an API, if they were	
14	returning an HTTP error code, to return the one	
15	that most closely matched the situation that the	02:46:07
16	API had encountered.	
17	Q. (By Mr. Melamed) Did Facebook maintain a	
18	list of the error codes it returned from	
19	unsuccessful API calls?	
20	A. The HTTP error code mechanism, there's	02:46:27
21	only a standard set of HTTP error codes that the	
22	W3c did like codifies, and so that would	
23	generally be the list of error codes that an	
24	engineer would be able to choose from.	
25	Q. You also mentioned error objects that	02:46:48
		Page 780

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1	could get returned, correct?	02:46:51
2	A. That's correct, yes.	
3	Q. Did Facebook maintain a list of the error	
4	objects that could be returned?	
5	A. Facebook maintained some lists of errors	02:47:07
6	that could be returned, but I'm unclear you	
7	know, how to say when that list came into existence	
8	and whether or not it was possible for an engineer	
9	to emit an error that was more custom than one of	
10	the predefined ones.	02:47:32
11	Q. Does Facebook presently maintain a list	
12	of error objects that can be returned?	
13	A. I am unaware of whether or not Facebook	
14	maintains a list of API error objects that	
15	that that could be returned.	02:47:52
16	Q. Are you aware of whether Facebook ever	
17	retained a list of error objects that could be	
18	returned?	
19	A. I recall in the past a system which was	
20	used to enumerate potential error states and	02:48:08
21	control the API response in those circumstances,	
22	but I couldn't say when that system started or	
23	or stopped and and whether or not it was fully	
24	comprehensive of of the API responses that could	
25	be returned.	02:48:35
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1	Q. What was the name of that system?	02:48:37
2	A. I don't recall the precise name of that	
3	system. I'm I'm going from memory here on a	
4	on a system that I that I recall, but	
5	couldn't couldn't give a very confident answer	02:48:55
6	as to the name of.	
7	Q. Do you have any recollection of what the	
8	name could have been or could have included?	
9	A. The system I'm referencing here in my	
10	head I think may have been called "Coded	02:49:12
11	Exception," but but, again, I I'm not	
12	entirely confident of of the precise name of	
13	that system.	
14	Q. If you wanted to know more about the	
15	system, whatever it was named, who would you go to?	02:49:24
16	A. My first act would be to search for the	
17	name of that in Facebook's internal tools and	
18	systems and then speak to someone on the platform	
19	team as to whether or not it was relevant.	
20	Again, I want to be clear: I'm trying to	02:49:49
21	give here the best answers I can based on my my	
22	understanding and my memory. And I'm trying also	
23	be clear when I'm doing that from my personal	
24	memory and experiences versus a more general	
25	answer.	02:50:07
		Page 782

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1	Q. Is there any individual you would ask	02:50:09
2	about this system that was used to reference the	
3	error states that could be returned?	
4	A. I would I would ask Steven Elia and	
5	see if he knew or knew who knew.	02:50:28
6	MR. SCHWING: Matt, we've been going for	
7	longer than an hour. Would this be a good time for	
8	a break?	
9	MR. MELAMED: Yeah. Let me just ask a	
10	few more questions and then we'll take a break, if	02:50:39
11	that works for you.	
12	MR. SCHWING: Okay.	
13	Q. (By Mr. Melamed) Is that okay,	
14	Mr. Cross?	
15	A. Yeah, that's fine.	02:50:47
16	Q. Do you have any recollection about the	
17	time period? I know you don't have a specific	
18	recollection about this system that was used to	
19	track error states, but do you recall any point in	
20	time when it was in use?	02:50:57
21	A. I I don't want to give an answer	
22	that that that's based on very, very poor	
23	memory of this. This is a you know, a system	
24	that I didn't have deep understanding or	
25	integration with from from, you know, eight or	02:51:17
		Page 783

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1	nine years ago. So I I'm just not sure I can	02:51:21
2	give an accurate answer as to as to when it was	
3	sourced or in use.	
4	Q. And you said you don't believe that am	
5	I correct that you do not believe the system is	02:51:38
6	still in use today?	
7	A. I do not know whether or not the system	
8	is in is in use today.	
9	Q. But to find that out, you would ask	
10	Mr. Elia?	02:51:52
11	A. I would ask Steven, Mr. Elia, if he had	
12	an answer to that question of that specificity,	
13	yes.	
14	Q. All right.	
15	MR. MELAMED: Before we go off the	02:52:11
16	record, Mr. Schwing and Mr. Cross, I'd like to ask	
17	for the notes that you are that you have taken	
18	in order to prepare for today. If you can produce	
19	those to us, I'd appreciate it, and doing so	
20	immediately so that we can review them and use them	02:52:25
21	during today's questioning.	
22	Mr. Schwing, if that's okay with you or	
23	if that's something you want to discuss off the	
24	record?	
25	MR. SCHWING: Yeah. Why don't we take a	02:52:38
		Page 784

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1	look at the notes just to make sure there's nothing	02:52:39
2	that's you know, for example, in terms of being	
3	privileged. And we can address that further, Matt.	
4	I think we can probably work it out.	
5	MR. MELAMED: The only note I would make	02:52:52
6	to that point is if there if there is something	
7	that is attorney-client privileged that Mr. Cross	
8	is using to testify from, it's no longer	
9	attorney-client privilege, and that will be waived.	
10	But happy to deal with that off the	02:53:06
11	record and, of course, take a look at those. But	
12	we would just ask that you do so as quickly as	
13	possible so we can use them during today's	
14	testimony.	
15	MR. SCHWING: Yeah, I I understand the	02:53:17
16	request. We'll take a look at the notes and we can	
17	follow up with you.	
18	MR. MELAMED: Okay.	
19	Happy to go off the record.	
20	THE VIDEOGRAPHER: Okay. We're off the	02:53:24
21	record. It's 2:53 p.m.	
22	(Recess taken.)	
23	THE VIDEOGRAPHER: We're back on the	
24	record. It's 3:18 p.m.	
25	Q. (By Mr. Melamed) Before the break we	03:18:46
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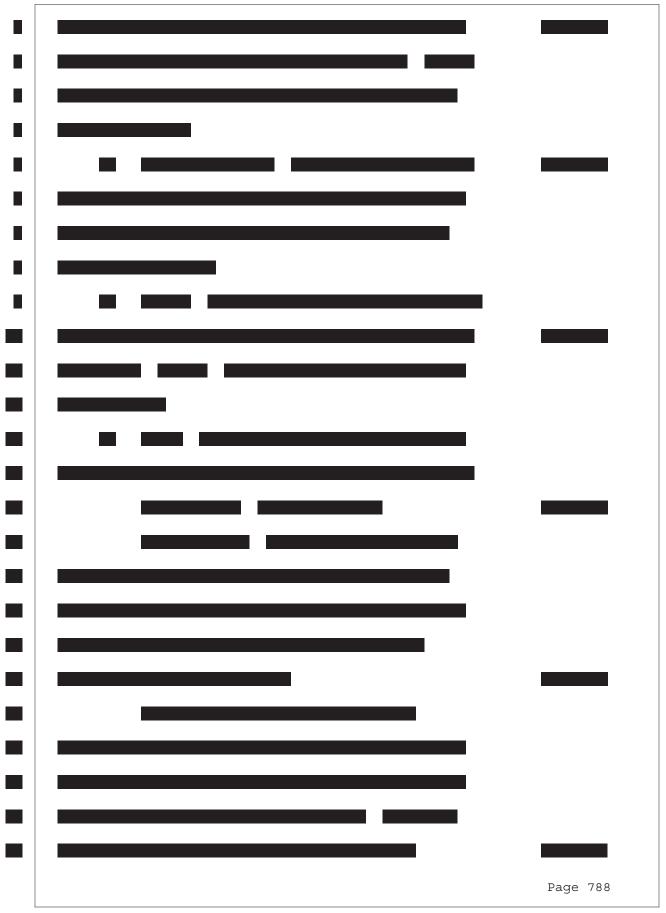
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1	were talking about the Can and Did tables.	03:18:48
2	Do you remember that?	
3	A. Yeah, I remember talking about those.	
4	Q. Does the Can table graph calls that were	
5	made by an app toward individual users' data?	03:19:03
6	A. No. My understanding is that the Can	
7	tables track the types of information that that	
8	the API nodes and fields that an app could access.	
9	Q. Does not let me withdraw that.	
10	What about the Did tables? Do the Did	03:19:35
11	tables track to an individual's user data that was	
12	accessed?	
13	A. My understanding is that the the Did	
14	tables include information about that has been	
15	shared with has been accessed by an app. I	03:19:52
16	can't say for certain if it includes the the	
17	user IDs whose information was was accessed.	
18	Q. Is the answer the same regarding whether	
19	the Did tables include a replacement user ID or	
20	other identifying information that would link	03:20:18
21	the the data that was accessed to an individual	
22	user?	
23	A. I I I'd be as I sit here today,	
24	you know, not entirely sure of the precise	
25	information that's logged in that in that table.	03:20:40
		Page 786

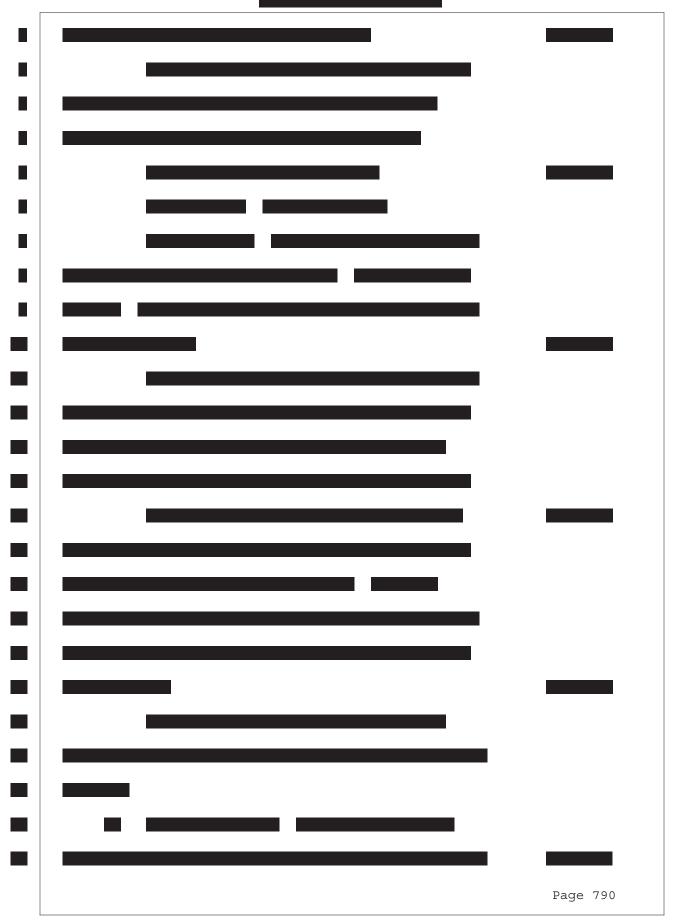
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1	Q. Who would you ask to determine whether	03:20:48
2	the Did table included information about individual	
3	users whose data had upon accessed by apps?	
4	A. To answer a question of that specificity,	
5	I I'd speak to Mr. Molaro and see if he knew the	03:21:08
6	answer.	
7	Q. What types of user data did Facebook	
8	share or make accessible to third parties?	
9	MR. SCHWING: Objection. Vague.	
10	THE DEPONENT: The the amount of	03:21:46
11	the types of user data that Facebook has made	
12	available to to third parties via the Facebook	
13	developer platform has has changed over time.	
14	Typically the Facebook developer platform would	
15	emit information about the the user who was	03:22:02
16	using the application who was integrated with the	
17	API and typically access to information on their	
18	Facebook profile which was made available via the	
19	API.	
20	Q. (By Mr. Melamed) Does Facebook have an	03:22:28
21	internal taxonomy of the types of user information	
22	that it made available via the API?	
23	MR. SCHWING: Object to form.	
		Page 787

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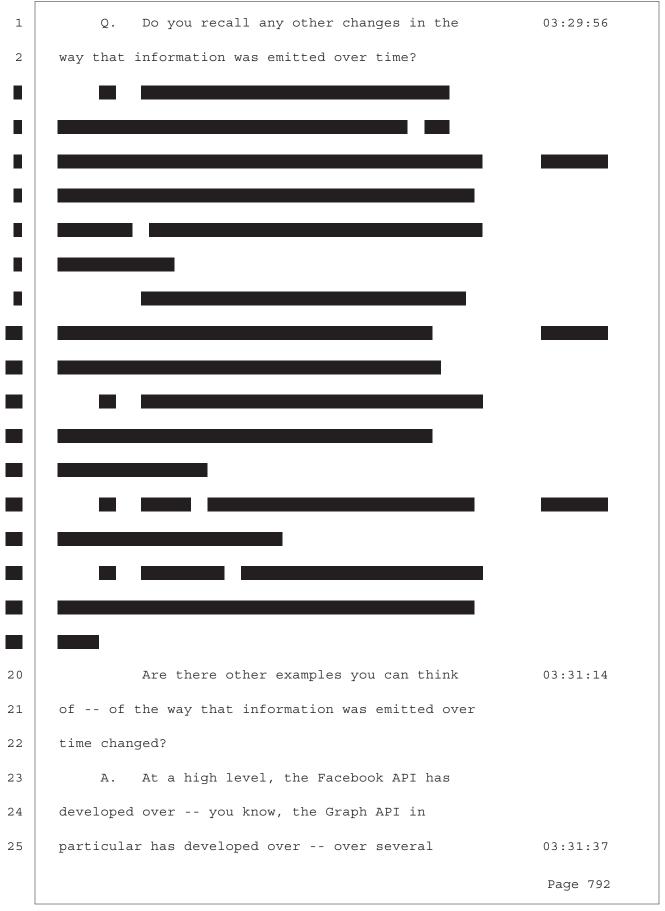






8	Q. Any other examples you can think of of	
9	the ways in which information was emitted over time	
10	changed?	03:28:53
11	A. Another example I can think of is the way	
12	that user authentication was performed within	
13	Canvas applications on the Facebook developer	
14	platform.	
15	I recall in the original version, the	03:29:12
16	access token and user IDs were emitted to a	
17	developer in a query string redirect in response to	
18	their authorization request, and I recall at some	
19	point that that was changed to passing those	
20	informations in the fragment of the URL rather than	03:29:34
21	the query string.	
22	Q. Do you recall when that change occurred?	
23	A. I think that change occurred in in	
24	around 2010, 2011, but I'm I'm not 100 percent	
25	confident on the date, but around that time.	03:29:54
		Page 791

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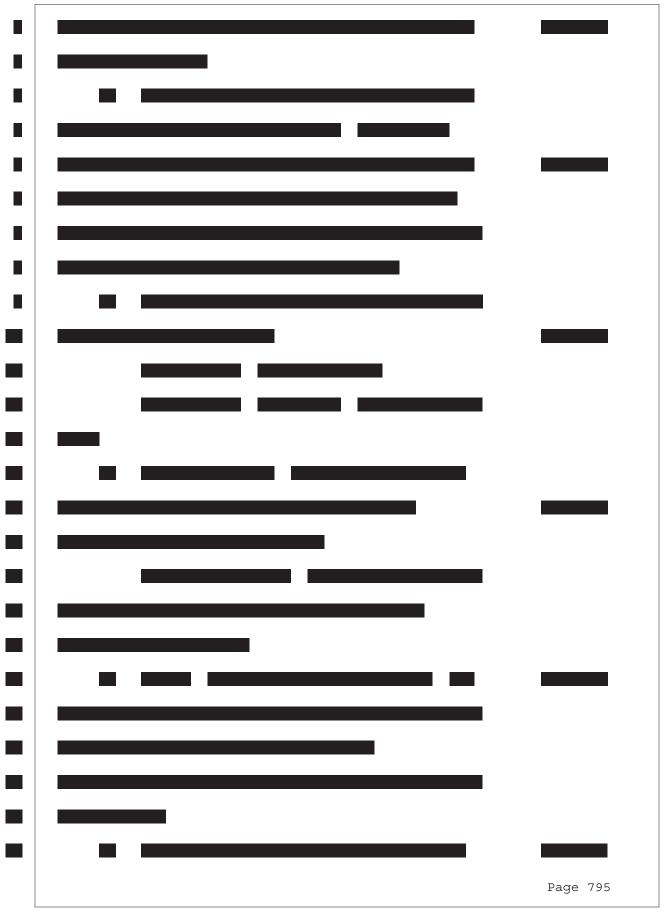
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1	years, and there have been new fields added, edges	03:31:40
2	and objects taken away, and permissions changed as	
3	well.	
4	So a whole range of of ways in which	
5	information was was made available or the way	03:31:56
6	you know, what apps had access to what has changed	
7	over time.	
8	Q. I want to go back to the list you just	
9	gave and ask a few questions about each example.	
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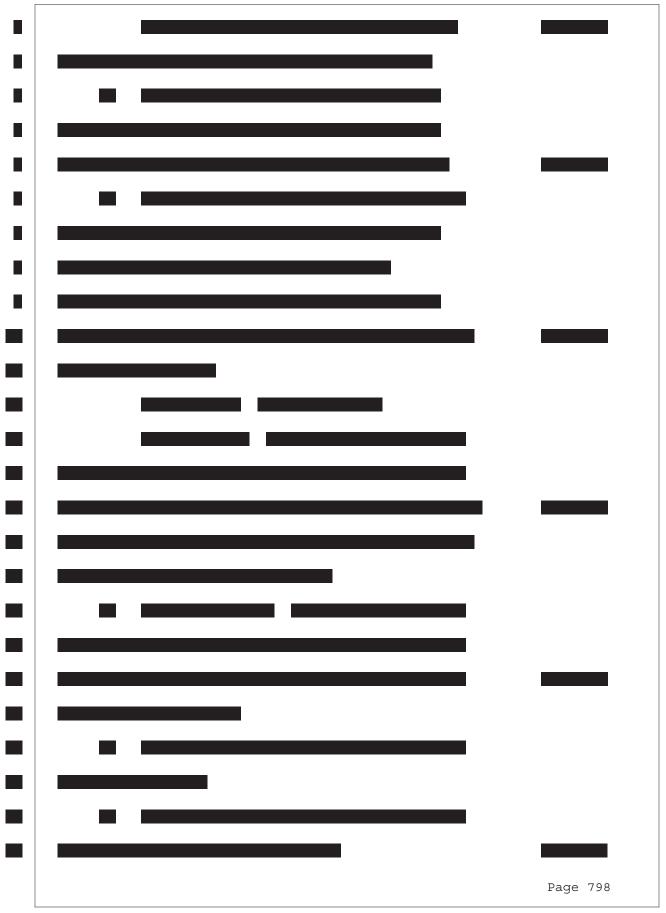
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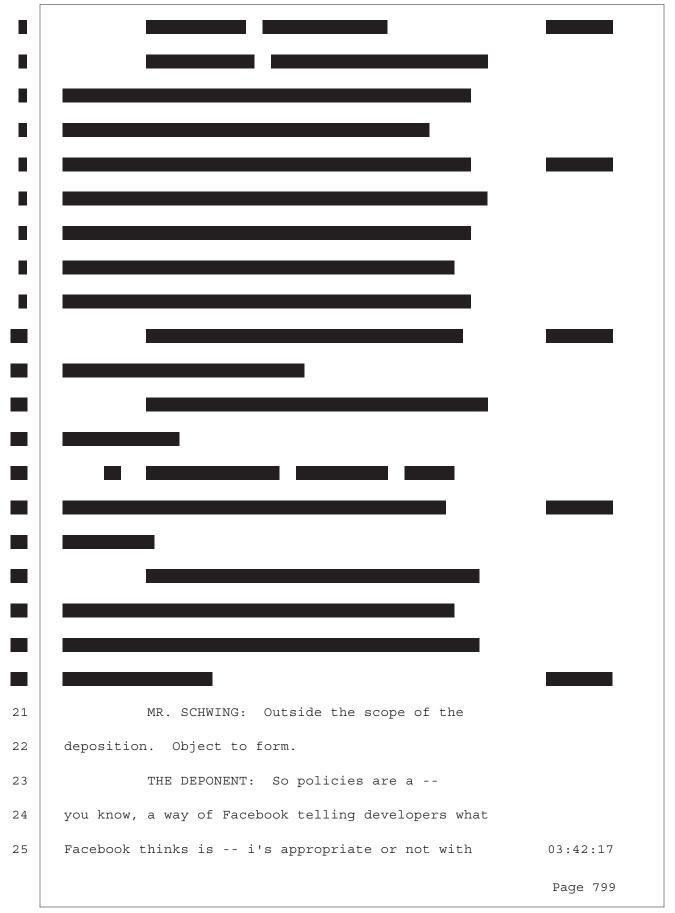
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1	the information. So and, again, as I said, like	03:42:22
2	I'm not an expert in what Facebook's policies did	
3	and did not permit at any given time.	
4	So a policy a platform policy is a	
5	written document. That doesn't, you know, prevent	03:42:32
6	a user doing something or sorry. Let me back	
7	up.	
8	Doesn't prevent a developer from from	
9	doing something, but it it's a clear statement	
10	that that is not something Facebook would would	03:42:47
11	have approved of, if indeed there was a policy	
12	written to that effect.	
13	Q. (By Mr. Melamed) Thank you. That helps.	
14	I think this is a good transition to	
15	topic 2d, where it's my understanding that Facebook	03:43:05
16	has identified somebody else to testify about 2d,	
17	except that you are going to testify about it today	
18	concerning a technical aspect relating to the	
19	platform integrity team, and the topic is "how	
20	Facebook ensured third parties' use of data and	03:43:26
21	information is limited to the use case."	
22	So can you tell me what is the technical	
23	aspect related to platform integrity team	
24	concerning how Facebook ensured third parties' use	
25	of user data they acquired from Facebook was	03:43:41
		Page 800
		ı

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		02 42 45
1	limited to the use case?	03:43:45
2	A. So there's a number of techniques that	
3	the platform integrity teams would have used to	
4	attempt to identify developers who were accessing	
5	or using data in in in different ways, in	03:44:04
6	ways that was against policy.	
7	One of those examples is that Facebook	
8	had a mechanism for reading the privacy policy and	
9	term of service URLs to make sure the the	
10	developer had provided for their application to	03:44:31
11	ensure that a a valid document existed at the	
12	URLs that had been provided. So that's one of the	
13	mechanisms.	
14	Q. Was that a technology that was developed	
15	to ensure that a privacy policy existed at the URL	03:44:52
16	provided?	
17	A. Yes, that's technology that was developed	
18	to ensure that where a developer runs an	
19	application that there was a privacy policy and	
20	terms of use document in existence.	03:45:09
21	Q. Did that tool evaluate the content of	
22	the the privacy policy in any way?	
23	A. My understanding is that that tool did	
24	not evaluate the content, but there are other	
25	mechanisms in in place by by Facebook that	03:45:30
		Page 801

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1	would evaluate the the content of the of the	03:45:33
2	privacy policy.	
3	Q. Okay. So just focusing on that tool for	
4	the purpose of this question.	
5	If the privacy policy at the URL provided	03:45:46
6	by an app said our privacy policy is there is no	
7	privacy in your data, that tool that you are	
8	referencing would have confirmed that a privacy	
9	policy existed; is that is that accurate?	
10	MR. SCHWING: Object to form. Incomplete	03:46:10
11	hypothetical.	
12	THE DEPONENT: My understanding is that	
13	that tool certainly would have said that a privacy	
14	policy existed, but then the evaluation of that	
15	privacy policy would have been performed by a	03:46:25
16	different team.	
17	Q. (By Mr. Melamed) Okay. Were each of the	
18	privacy policies or apps that access user data on	
19	the platform evaluated by the by anyone at	
20	Facebook?	03:46:47
21	MR. SCHWING: Outside the scope of the	
22	deposition. Object to form.	
23	THE DEPONENT: My understanding is that	
24	privacy policies of third-party applications have	
25	been audited by operations and policy teams at	03:47:04
		Page 802

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1	Facebook, but exactly which apps they evaluated the	03:47:11
2	policies for and how they evaluated them is is	
3	not not something I'm an expert in. I think	
4	Ally Hendrix is probably best placed to talk about	
5	how Facebook operationalized the review of privacy	03:47:29
6	policies and terms of use statements by developers.	
7	Q. (By Mr. Melamed) Okay. And just to be	
8	clear, that is not the qualitative review of	
9	privacy policies is not the technical aspect	
10	related to platform integrity team that you were	03:47:42
11	prepared to testify about today; is that right?	
12	A. The example I've given here is about a	
13	technical mechanism for ensuring a privacy policy	
14	and terms of use statement existed for for an	
15	app developer, not how those documents were	03:48:02
16	evaluated by by the operations teams and policy	
17	teams at Facebook.	
18	Q. What happened when Facebook determined	
19	that no privacy policy existed at the URL provided	
20	by an app?	03:48:22
21	A. Different things would have happened	
22	depending on what the app which app it was. If	
23	it was an app where there was a partnerships	
24	team at Facebook that was responsible for the	
25	relationship with that developer, and typically the	03:48:42
		Page 803

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1	operations team would ask the partnerships team to	03:48:45
2	reach out to the developer to find out why the	
3	privacy policy or terms of use statement didn't	
4	exist and ask them to to provide one or update	
5	the the URL that was available.	03:48:59
6	For other apps that may not have had a	
7	managed partner, the developer operations team	
8	would have or could have placed a moratorium on the	
9	application, but exactly which moratorium they	
10	would have have chosen to use, I'm it likely	03:49:19
11	depended on a number of factors.	
12	Q. And are you prepared to testify today	
13	about those factors?	
14	A. I can give you some examples of the types	
15	of moratoriums that would be applied, but exactly	03:49:36
16	which one would be applied would depend would	
17	have differed over time and a number of different	
18	factors.	
19	Q. What are some examples of the moratoriums	
20	that would have applied could have applied?	03:49:49
21	A. So one example is that Facebook	
22	application could be placed into sandbox mode or	
23	developer mode, which prevents users who are not	
24	listed as developers of the application itself from	
25	interacting with it.	03:50:12
		Page 804

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1	Q. And what are other examples of of	03:50:16
2	different types of moratoriums that could have been	
3	imposed if no privacy policy was found?	
4	A. So other examples, again, of moratoriums	
5	that Facebook has employed as as our as part	03:50:28
6	of our as here, includes deleting the app	
7	itself, so the app is no longer available on the	
8	platform.	
9	And then another example of a moratorium	
10	would be preventing the app from being able to	03:50:46
11	publish to Facebook.	
12	As I said, exactly which moratoriums were	
13	applied in the case of of a privacy policy or	
14	terms of use document not being available is	
15	something the developer operations team and policy	03:51:02
16	team are best placed to to talk about. I can	
17	give you examples of the the example the	
18	moratoriums I'm aware of, having talked to the	
19	people involved, but exactly which ones are applied	
20	is is something that that that operations	03:51:17
21	and policy teams are best placed to to answer.	
22	Q. Are there records at Facebook regarding	
23	apps for which no privacy policy was found by the	
24	technology you described?	
25	A. This technology will have would have	03:51:39
		Page 805

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1	ruled in logs as to apps the word "detected" as	03:51:45
2	not having one of these documents in their a	
3	valid document in their existing for their	
4	application.	
5	But the retention, you know, exactly	03:52:00
6	what's in those those logs and the the	
7	duration for which they've been retained is is,	
8	you know, something I can't I can't answer as	
9	as we sit here today. But there would have been	
10	logs as part of the existence of the system, yes.	03:52:14
11	Q. Do you know what those logs were called?	
12	A. They would have been tables relating to	
13	the name of the system in in Hive, most likely.	
14	But I I you know, I don't know the exact name	
15	of of the tables that were that were that	03:52:34
16	were created to log this information.	
17	Q. Does this technology that you described	
18	whereby Facebook would evaluate whether there	
19	existed a value a valid document at the URL	
20	provided by the developer for its privacy policy,	03:53:03
21	does this technology still exist today?	
22	MR. SCHWING: Object to form.	
23	Q. (By Mr. Melamed) Can I just restate the	
24	end of that.	
25	Does the technology describe is the	03:53:19
		Page 806

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1	technology you described still used by Facebook	03:53:21
2	today?	
3	MR. SCHWING: Same objection.	
4	THE DEPONENT: My understanding is that	
5	that technology is still in place as part of our	03:53:31
6	efforts to ensure developers are representing their	
7	apps and their behaviors to use as appropriately.	
8	Q. (By Mr. Melamed) And am I correct in	
9	understanding that you do not know the name of the	
10	table that records that logs the information	03:53:51
11	about apps that do not have a valid document at the	
12	URL provided for their privacy policy?	
13	A. So in preparation for for today, I	
14	spoke to, you know, people involved in in these	
15	efforts about, in general, the techniques and tools	03:54:07
16	which are applied. This was one of the examples	
17	that was you know, we talked about. You know,	
18	so I have a high-level understanding of of that	
19	system and its existence, but the precise name of	
20	the table in in Hive, that's that's something	03:54:29
21	I'm afraid I don't have in my head today.	
22	Q. And you mentioned you used the phrase	
23	"valid document," but the tool automatically	
24	there's let me see if I'm describing this	
25	correctly.	03:54:50
		Page 807
		I

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1	So Facebook wrote code engineers at	03:54:50
2	Facebook wrote code to determine whether a valid	
3	document existed at the URL provided by the	
4	developers for their privacy policy; is that an	
5	accurate statement of the of the way the tool	03:55:04
6	worked?	
7	MR. SCHWING: Object to form.	
8	THE DEPONENT: That matches my high-level	
9	understanding of of how this tool worked, yes.	
10	Q. (By Mr. Melamed) Do you know what	03:55:17
11	qualified as a valid document in that context?	
12	A. The system would likely have checked for	
13	a number of things. For example, the whether or	
14	not when we when the system accessed that URL,	
15	whether or not an error code was returned by the	03:55:39
16	the server.	
17	So that would be certainly one of the	
18	things that that the system was checking for.	
19	Q. Are you prepared to testify regarding	
20	what constituted a valid document in this review	03:55:56
21	process?	
22	A. So, again, I can give you my high-level	
23	understanding of how the system works from from,	
24	you know, talking to the to the people involved.	
25	And in preparation for today, we talked about a	03:56:08
		Page 808

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1	large number of of different systems at at	03:56:13
2	the company. So I can give my high-level	
3	understanding of how that of how that system	
4	worked.	
5	My understanding is it would have	03:56:25
6	accessed the URL that was provided by the	
7	developer, looked for a number of things that would	
8	have determined, in Facebook's estimation, as to	
9	whether or not that that document was considered	
10	valid or not.	03:56:41
11	Q. Are you familiar with the use of the text	
12	lorem ipsum as placeholder text for when designing	
13	or writing a document?	
14	A. Yes, I'm aware of the the practice of	
15	using lorem ipsum.	03:56:58
16	Q. Are you do you know whether the tool	
17	you're describing which looked at the URL that a	
18	developer had provided for a privacy policy would	
19	have determined that a valid document existed if	
20	the privacy policy URL linked to text that had	03:57:23
21	lorem ipsum placeholder text?	
22	A. So the precise nature of how this system	
23	behaved is and whether or not it would have	
24	returned a valid document or not, determination	
25	in in that respect, is a level of detail I	03:57:48
		Page 809

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1	I I don't have in my head right now. So hard	03:57:52
2	hard for me to answer that question in that level	
3	of specificity, I'm afraid.	
4	Q. I'm I'm not trying to get you to	
5	testify beyond your knowledge. I'm just the	03:58:05
6	indication we were provided is that you were	
7	prepared to talk about a technical aspect relating	
8	to platform integrity team, and you identified this	
9	as the technical act a technical aspect you were	
10	prepared to identify. So I'm just trying to	03:58:23
11	understand the extent of your testimony.	
12	MR. SCHWING: And, Matt and I want you	
13	to continue your questioning, so I'll be brief	
14	here.	
15	Just for the record, we we did	03:58:31
16	indicate in the letter that that he would	
17	generally speak to this issue to give you	
18	information on it with the idea that could then,	
19	you know, learn about it, if you need to ask other	
20	witnesses about it, et cetera.	03:58:44
21	But I want to make the record clear that	
22	we did use the word "generally," I believe.	
23	Q. (By Mr. Melamed) Are there other	
24	technical aspects relating to the platform	
25	integrity team that you that you are prepared to	03:58:57
		Page 810

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1	testify about today concerning how Facebook ensured	03:59:00
2	third parties' use of user data they acquired from	
3	Facebook was limited to the use case?	
4	A. So another example of of a technique	
5	that the platform integrity team used was a system	03:59:18
6	or set of systems that evolved over time that	
7	looked for unusual patterns of API calling	
8	behavior.	
9	So that's another another type of	
10	example.	03:59:39
11	Q. How were unusual patterns of API calling	
12	behavior defined?	
13	Let me restate that.	
14	What constitutes an unusual pattern of	
15	API calling behavior?	03:59:56
16	A. The answer to that is somewhat in the	
17	definition of the integrity teams, one of the	
18	challenges of working in in a in a space like	
19	this is the adversarial nature of it, and so some	
20	developers you know, what what is unusual or	04:00:21
21	is considered unusual by the integrity team is a	
22	set of things that changes over time and will be	
23	different from context to context.	
24	Typically and generally, though, what the	
25	team would be looking for is, for example, cases	04:00:37
		Page 811

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1	where apps were regularly hitting rate limits or	04:00:42
2	apps were making a high number of API calls for a	
3	set of methods that that they were that they	
4	were calling the API.	
5	So those are two examples of what might	04:00:58
6	be considered anomalous.	
7	Q. What are the rate limits?	
8	A. So in the context of the Graph API? Is	
9	that what you mean by how would you like me to	
10	answer generally in in can you help me	04:01:16
11	understand the kind of answer what kind of	
12	answer you're expecting, generally or specifically	
13	as it applies to the Graph API?	
14	Q. In the context of the answer you just	
15	provided, where you said that one way a platform	04:01:27
16	integrity team looked at unusual API calling	
17	behavior was by looking at unusual or unusual rate	
18	limits; is that right?	
19	A. More that if an app was making a lot of	
20	API calls to to a specific method or against the	04:01:51
21	API and hitting hitting rate limit.	
22	Q. Okay. Thank you for the clarification.	
23	What did you mean by "rate limits" in	
24	that context?	
25	A. So in that context, a rate limit refers	04:02:05
		Page 812

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			_
1	to a a number of times that an API an app,	04:02:08	
2	third-party application, can call an API within a		
3	given time window. The exact definition of that		
4	is is will have changed over time, but at a		
5	high level, that's that's what we mean by rate	04:02:30	
6	limit.		
7	Q. And who sets or establishes the rate		
8	limits?		
9	A. The platform integrity team would likely		
10	have been responsible for for for setting the	04:02:46	
11	rate limits or being certainly being consulted		
12	for how they were how they were set.		
13	Q. And who at the platform integrity team		
14	would you speak to to understand how rate limits		
15	were set over time at Facebook during the time	04:03:07	
16	period of this case?		
17	A. Given the the the time period of		
18	the case is so wide, I would start by trying to		
19	speak to somebody in the in the platform		
20	integrity team today to see if they had more	04:03:29	
21	information. I I have information and have a		
22	implemented at various times, but, you know, the		
23	the mechanism of rate limiting across across 15		
24	years would have would have changed.		
25	Q. And who would you reach out to today if	04:03:48	
		Page 813	

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1	you wanted to talk on the platform integrity	04:03:50
2	team today if you wanted to talk about rate	
3	limiting over time?	
4	A. I would start by reaching out to to	
5	Dan Xu and see if he was able to answer the the	04:04:03
6	kind of specific questions that I'm you know,	
7	beyond what I'm able to answer myself.	
8	Q. Can you spell his last name, please.	
9	A. That's X-U.	
10	Q. You also noted that another unusual	04:04:27
11	pattern of API calling behavior where API calls for	
12	particular sets of methods, right?	
13	A. Yes. And from speaking to the platform	
14	integrity team, one thing that may have built	
15	has evolved over time is a system to look for high	04:04:54
16	levels of of API calls relative to the number of	
17	users using the application, for example.	
18	Q. You mentioned that evolved over time,	
19	correct?	
20	A. My understanding, from talking to the	04:05:12
21	people involved, is that and as it would be	
22	common in any adversarial space, as technology	
23	evolves, the first versions might be relatively	
24	simple and rules based, and and more	
25	sophisticated ones might be you know, might	04:05:30
		Page 814

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1	be would have been developed over time for	04:05:34
2	example, machine-based models and so on.	
3	Q. Do you know when the first versions of	
4	the first version of this tool was built by	
5	Facebook? I'm not speaking outside the context of	04:05:52
6	this case.	
7	A. Sure. This is one of the things that	
8	people have have when I've talked to the	
9	people involved in this, this is certainly	
10	something they they reference from around the	04:06:09
11	in existence around the 2011, 2012 time frame. So	
12	my understanding is that such a system was in	
13	place, you know, even a basic one then. So that's	
14	the that's the kind of earliest example I've	
15	I've I've heard about when talking to the people	04:06:31
16	involved in preparation for today.	
17	Q. How were the reports or notifications	
18	that there were API calls high levels of API	
19	calls for the number of users on a particular app,	
20	what kind of reports were generated reflecting the	04:06:48
21	apps that were on that list?	
22	A. My understanding from again, from	
23	talking to the people involved is that one of the	
24	forms that that would have taken is is a	
25	dashboard that that was made available to to	04:07:08
		Page 815

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1	developer operations, or DevOps, that they could	04:07:11
2	look at and see a list of apps by, you know	
3	you know, that were making a large number of API	
4	calls relative to the number of authenticated	
5	users.	04:07:32
6	Q. So putting this together, is it right to	
7	say that around 2011 or 2012 and you're not	
8	specific as to time period, but generally those	
9	those years there was a dashboard that would	
10	that was available to DevOps that identified apps	04:07:49
11	making a high level of API calls for the number of	
12	users those apps had; is that right?	
13	A. Right. The the from my	
14	understanding the yes, around around that	
15	time, possible possibly later, the exact form	04:08:12
16	that that information would have taken would the	
17	way in which it would have been made available to	
18	DevOps may may have changed.	
19	But, yes, the the there were	
20	there was a mechanism in place to allow DevOps to	04:08:26
21	see apps that were making an unusual number of API	
22	calls relative to the number of users using the	
23	app.	
24	Q. Were there sorry. Let me withdraw	
25	that.	04:08:42
		Page 816
- 1		

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1	Are there records that still exist of the	04:08:43
2	apps that were making a high number of API calls	
3	for the number of users starting in the 2011 or '12	
4	time period?	
5	MR. SCHWING: Object to form.	04:09:00
6	THE DEPONENT: So my understanding is	
7	this this certainly logging from 2012	
8	onwards, as I understand it, of the API calls, the	
9	apps were making to particular methods.	
10	So I know that that information has	04:09:21
11	been has been stored and, in fact, made	
12	available in this case, as I understand it.	
13	It's it's possible that there is a way	
14	to reconstruct whether or not those calls were	
15	unusual relative to number of apps, but again,	04:09:42
16	exactly what Facebook's data retention policy is in	
17	this is is hard to that level of detail to	
18	know.	
19	So it may be possible to recreate those	
20	dashboards, but but I can't for certain I	04:09:56
21	can't with certainty say that that would be	
22	possible today.	
23	Q. (By Mr. Melamed) You you mentioned	
24	from 2012 forward it's your understanding that	
25	information has been provided in this case	04:10:06
		Page 817

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1	reflecting the logging of API calls to particular	04:10:07
2	methods by particular apps, correct?	
3	A. That's correct, yeah.	
4	Q. What do you know what the name is	
5	there a name for that information or that table or	04:10:19
6	whatever it is?	
7	A. I think I'm thinking of here is the API	
8	hits method R table, which I correctly styled is	
9	API_method API_hits_method_R.	
10	And I apologize, Rebecca, for making you	04:10:40
11	have to write that down.	
12	Q. Okay. And have you heard that referred	
13	to as "the method table," just as a stand-alone	
14	two-word name without the underscores?	
15	A. I've heard that referred to as "the	04:10:58
16	method table."	
17	Q. Is that your understanding of what is	
18	being referred to when people talk about the method	
19	table?	
20	A. That's my understanding of what's being	04:11:04
21	referred to when people talk about the method	
22	table.	
23	Q. Going back to the the technology that	
24	exists to check whether privacy policies or valid	
25	documents exist at the URL for each app.	04:11:21
		Page 818

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1	Do you recall talking about that?	04:11:24
2	A. Yeah, I recall talking about that.	
3	Q. And there were some questions you weren't	
4	able to answer about whether valid what the	
5	meaning of a valid document was, for example,	04:11:31
6	correct?	
7	MR. SCHWING: Object to form.	
8	THE DEPONENT: The precise nature of how	
9	that system determines whether a document is valid	
10	or not is a a level of detail I don't have right	04:11:42
11	now and will have changed over time.	
12	Q. (By Mr. Melamed) Who would you talk to	
13	to figure out how that had changed over time, how	
14	what a valid document was had changed over time?	
15	A. I would attempt to speak to somebody on	04:12:01
16	the platform integrity team to see if they could	
17	answer a question with that level of specificity.	
18	Q. And who would you go to now if you wanted	
19	to start that inquiry?	
20	A. I would start with Dan Xu.	04:12:15
21	Q. Are there other technical aspects	
22	relating to the platform integrity team concerning	
23	how Facebook ensured third parties' use of user	
24	data that they acquired from Facebook was limited	
25	to the use case that you are prepared to testify	04:12:34
		Page 819

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1	about?	04:12:36
2	A. Another example that that I've learned	
3	about by preparing for this case is a system which	
4	looks for apps which are similar to those which	
5	have been enforced upon by our platform policy and	04:12:54
6	operations teams.	
7	Q. Do you know when that technology was	
8	implemented?	
9	A. So this activity has likely been done in	
10	some form for for quite some time. Early in	04:13:24
11	its early in earlier in the gestation, this	
12	would have been a more manual process, and my	
13	understanding that since a an automated way of	
14	doing it is now is now in place.	
15	And that's been developed more recently	04:13:44
16	using machine learning to train to detect apps	
17	which are behaving similar similarly to apps	
18	which have previously been enforced upon by our	
19	operations team.	
20	Q. When did that more automated process	04:14:02
21	commence?	
22	A. The precise date, I I don't have	
23	access to the precise date that that that	
24	that activity that that automated system came	
25	into being. From talking to the people involved,	04:14:19
		Page 820

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1	you know, a very simple automated some very	04:14:22
2	simple automated processes were likely in use in	
3	around 2012, 2013. But, again, the specifics,	
4	I'm you know, I just I don't have that level	
5	of detail available to me right now.	04:14:36
6	Q. And in saying you don't have that level	
7	of detail available to you now, you can't are	
8	you able to speak about that, what you referred to	
9	as a "simple automated process" that you thought	
10	was in in place in 2012 or 2013 time period?	04:14:55
11	Can you talk about how that simple process worked?	
12	MR. SCHWING: Object to form.	
13	THE DEPONENT: So I I can talk more	
14	concretely about the I talk more about the	
15	systems that are in place today as I understand	04:15:15
16	them, because in preparation for for today's	
17	case, most of the people I spoke to had, you know,	
18	knowledge of the most recent systems in place.	
19	Q. (By Mr. Melamed) And when you're talking	
20	about the systems in place today, how long have	04:15:33
21	those systems been in place?	
22	A. Again, exactly exactly which systems	
23	are in in in place today and and when they	
24	were started, they were like I again, I don't	
25	have the the exact dates as to when, you know,	04:15:55
		Page 821

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1	those systems were first implemented or how it	04:15:59
2	operated over time. I've, you know, done the best	
3	job I can to prepare. I talked to a number of	
4	people who who were involved in these systems,	
5	but the precise dates in which they existed is	04:16:12
6	is not something I have recall.	
7	Q. Without precision, are you able to say	
8	about when the systems that you were prepared to	
9	testify about today started being used at Facebook?	
10	A. The exact lineage of and when these	04:16:37
11	systems came into being, like I I don't have the	
12	precise the precise timelines, I'm afraid. And	
13	as I say, I think these these systems overlap	
14	and, you know, were developed over a long period of	
15	time, and so hard to give very specifics about	04:16:56
16	exactly what the behavior was and what the major	
17	milestones of evolution are.	
18	Q. Do you know if the systems that are in	
19	place today were implemented after March 2018?	
20	A. It's likely, given that there's a a	04:17:22
21	team who works on this, that they've been	
22	constantly developing developing these kinds of	
23	systems. And so, yes, there there will be	
24	systems in place today that were not in operation	
25	around 2018.	04:17:39
		Page 822

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1	Q. You mentioned that there are multiple	04:17:46
2	systems in this context of systems to identify apps	
3	that behave similarly to those that have been	
4	kicked off the platform, correct?	
5	A. The the it's likely there are	04:18:05
6	different different parts to the system that	
7	that looks for anomaly detection and similarity	
8	detection. So hard again, like, I can talk	
9	about these in high-level concept of what they	
10	intend to do and and how they what their	04:18:23
11	functionality you know, how they are used.	
12	The detail of the technical	
13	implementation is something best left to an	
14	engineer.	
15	At a high level, the job of the	04:18:36
16	assistants is to look for an application or	
17	applications which the the policy and operations	
18	team have have enforced upon and then look for	
19	things like patterns of API calling behavior which	
20	are similar and things like IP addresses and where	04:18:55
21	those calls are coming from. Do we see other apps	
22	which are are coming from a similar data center	
23	or similar IP range.	
24	And then one of the other examples would	
25	be whether or not these apps have developers in	04:19:12
		Page 823

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1	common, user users developers, and are there	04:19:17
2	similarities between those user developers.	
3	So pretty typical in an integrity context	
4	is the you know, the people using the people	
5	trying to develop bad apps are also trying to be	04:19:30
6	not detected, and therefore the systems in place to	
7	detect them need to evolve over time in order to	
8	stay ahead of of those patterns in behavior.	
9	So precisely how you know, how these	
10	systems are architected and whether or not which	04:19:49
11	different pieces there are is, you know, a level of	
12	engineering detail. From from a product	
13	perspective, those are the the goals of the	
14	system and the types of things that those systems	
15	are looking for in order to identify other apps	04:20:07
16	that might be behaving inappropriately.	
17	Q. To be clear, I'm not asking for	
18	engineering-level detail of how exactly how this	
19	happened. If I were to look for that information,	
20	who would I ask? Or if you were to look for that	04:20:24
21	level of information, who would you reach out to?	
22	A. Again, I would speak to one of the one	
23	of the engineers on the platform integrity team to	
24	understand, you know, that that level of	
25	specificity as to exactly how the systems are	04:20:45
		Page 824

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1	implemented.	04:20:47
2	Q. Is there a particular person you would	
3	reach out to as being somebody you would start	
4	with?	
5	A. I would start with Dan Xu again.	04:20:59
6	Q. Now, you mentioned, I think, three	
7	factors and I just want to make sure I have	
8	them that this tool would have looked at.	
9	So one is pattern of API calls, and	
10	another is IP addresses, and another is developers	04:21:14
11	in common.	
12	Do I have that right?	
13	A. Those are three examples I I	
14	mentioned. My understanding is that the the	
15	there are likely more factors involved, and a	04:21:29
16	machine learning system would be looking for a	
17	range of factors.	
18	Q. Are you aware of any other factors as you	
19	sit here right now?	
20	A. As I sit here right now, no. So I I	04:21:44
21	can imagine some of what they might be, but I think	
22	that that would be speculating.	
23	Q. Do you know when Facebook started looking	
24	at the commonalities in API calling behavior	
25	between apps that had been kicked off platform and	04:22:02
		Page 825

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apps that were presently on platform?	04:22:06
A. Yeah. Again, I talked to people involved	
in in integrity who who were involved in a	
number of ways of identifying apps that were	
potentially doing unusual behavior. The looking	04:22:23
for apps that were similar to apps that misbehaved	
is something that was likely going on manually in	
around 2013, 2014, possibly earlier.	
But that's when the people I I spoke	
to talked about beginning to to perform that	04:22:45
kind of activity.	
Q. Do you know who was involved in that	
manual review that was happening around 2013, 2014	
time period?	
A. I don't know exactly who was involved. I	04:23:06
mean, platform integrity team changed over time,	
too.	
The there were people I spoke to	
who who were involved in the platform integrity	
team around that time.	04:23:23
Q. Who are those people?	
A. So one name is Eugene Zarashaw.	
Zarakhovsky was his previous name. So I think he	
was he was involved.	
Another person that was involved is	04:23:42
	Page 826
	A. Yeah. Again, I talked to people involved in in integrity who who were involved in a number of ways of identifying apps that were potentially doing unusual behavior. The looking for apps that were similar to apps that misbehaved is something that was likely going on manually in around 2013, 2014, possibly earlier. But that's when the people I I spoke to talked about beginning to to perform that kind of activity. Q. Do you know who was involved in that manual review that was happening around 2013, 2014 time period? A. I don't know exactly who was involved. I mean, platform integrity team changed over time, too. The there were people I spoke to who who were involved in the platform integrity team around that time. Q. Who are those people? A. So one name is Eugene Zarashaw. Zarakhovsky was his previous name. So I think he was he was involved.

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-		
1	someone called Jonathan Gross.	04:23:45
2	And then the exactly how that	
3	information is was was used to enforce upon	
4	applications is, again, I think a set of questions	
5	for the developer ops and policy teams. I think	04:23:57
6	Ally Hendrix is is placed to answer those kinds	
7	of questions.	
8	Q. Do you know who led the development of	
9	the automation of this review of and by "this	
10	review," I'm talking about the process by which	04:24:16
11	Facebook was looking for similar apps to those that	
12	had been kicked off platform.	
13	A. The specific name of the of the people	
14	involved, no, I don't have you know, I don't	
15	have their names.	04:24:29
16	As I've said, like this is a this is a	
17	concept that that will that evolved over	
18	over time and, you know, in its earliest phases	
19	would have been a rules-based system or very simple	
20	rules-based system and today is is my	04:24:46
21	understanding is today is a much more more	
22	complex system employing machine learning.	
23	I I I know the name of the of	
24	the engineering manager involved more recently, so	
25	I I, you know, I I recall meeting him	04:25:05
		Page 827

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1	recently to talk about this stuff. I can't think	04:25:11
2	of his name right now. I think Jay is his first	
3	name, I think.	
4	Q. If you remember that at any point during	
5	the deposition, just please stop and say, "I	04:25:24
6	remember the name of the person."	
7	A. I will. As as I've said, in order	
8	to to prepare for the broad topics to cover	
9	today, you know, I had to do a lot of prep across a	
10	number of areas.	04:25:41
11	Q. Are there other technical aspects	
12	relating to the platform integrity team concerning	
13	how Facebook ensured third parties' use of user	
14	data they acquired from Facebook was limited to the	
15	use case?	04:25:53
16	A. So another technique that I I'm aware	
17	has been employed is our security teams looking for	
18	app scoped user IDs in data dumps that may be	
19	available to various developers. So that's a	
20	another another common technique that that	04:26:29
21	was employed, as I understand it, at various times.	
22	Q. And just so we don't have to keep going	
23	back to the same question, I'd like to get out as	
24	many of these examples you know, this is	
25	something that you're here to testify about, so I	04:26:43
		Page 828

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1	just want to get the list of the examples of	04:26:48
2	technical aspects relating to the platform	
3	integrity team concerning how Facebook ensured	
4	third parties' use of user data they acquired from	
5	Facebook was limited to the use case.	04:26:57
6	So you just mentioned security teams, and	
7	let's just try and list all of the other ways that	
8	you're aware of, if you can do that.	
9	A. So another mechanism that is in place	
10	today is app review. And so app review is a	04:27:18
11	mechanism by which Facebook asks developers to	
12	explain why they want access to a particular piece	
13	of information, and then Facebook uses technical	
14	means to determine whether or not they can, indeed,	
15	request that information from from users. So	04:27:43
16	that's another example.	
17	Q. Any other examples?	
18	A. Another example of how Facebook attempted	
19	to ensure that information was not being	
20	inappropriately shared with fourth parties, in this	04:28:05
21	case, people that the third-party developer had a	
22	relationship with, is technical mechanisms to look	
23	for user IDs or access tokens in referrers to	
24	social plug-ins embedded on third-party developer	
25	websites.	04:28:32
		Page 829

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1	That's a lot of information, but these	04:28:37
2	things are sometimes complex to explain.	
3	Q. Are there any other technical aspects	
4	related to the platform integrity team concerning	
5	how Facebook ensured third parties' use of the data	04:28:49
6	they acquired from Facebook was limited to use	
7	case.	
8	A. Those are the main ones that that	
9	we've that were were talked through with me	
10	when I prepared for this. We talked about app	04:29:08
11	scoped IDs and page scoped IDs. We talked about	
12	permissions actually, no, we haven't talked	
13	about permissions. We should talk about	
14	permissions real quick.	
15	So permissions is a mechanism, again, by	04:29:24
16	which Facebook attempts to ensure that information	
17	is only available to third parties within the	
18	context of a particular use case.	
19	Q. Let's go through these ones that you just	
20	listed. I just want to understand. Again, I'm not	04:29:43
21	asking for the technical mechanisms by which they	
22	worked; I'm just asking for time period, general	
23	implementation.	
24	So you mentioned first the security teams	
25	that search for app scoped user IDs in data dumps,	04:29:58
		Page 830

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1	correct?	04:30:04
2	A. My understanding is that's a that's an	
3	activity that's been performed periodically.	
4	Q. Starting about when?	
5	A. I don't have the exact dates as to as	04:30:15
6	to when that activity was was done. Again, app	
7	scoped user IDs began to be emitted in in	
8	April 2014, and so after that is when it would have	
9	been, you know, technically possible to	
10	you know, for for those IDs to start to show up	04:30:36
11	in third-party data dumps.	
12	Q. When you're talking about these	
13	third-party data dumps, are you talking about	
14	Have you heard the phrase "dark web"?	
15	A. I have heard the phrase "dark web."	04:30:51
16	Q. Are you are you talking about data	
17	made available by actors on the dark web?	
18	A. My understanding from, you know, having	
19	spoken to people involved in this is the	
20	information may have been available over the dark	04:31:10
21	web, but there are other ways in which that	
22	information may have been available as as well.	
23	So it's not not just limited my understanding	
24	is it's not just limited to to those sources.	
25	Q. Your understanding is this this	04:31:26
		Page 831

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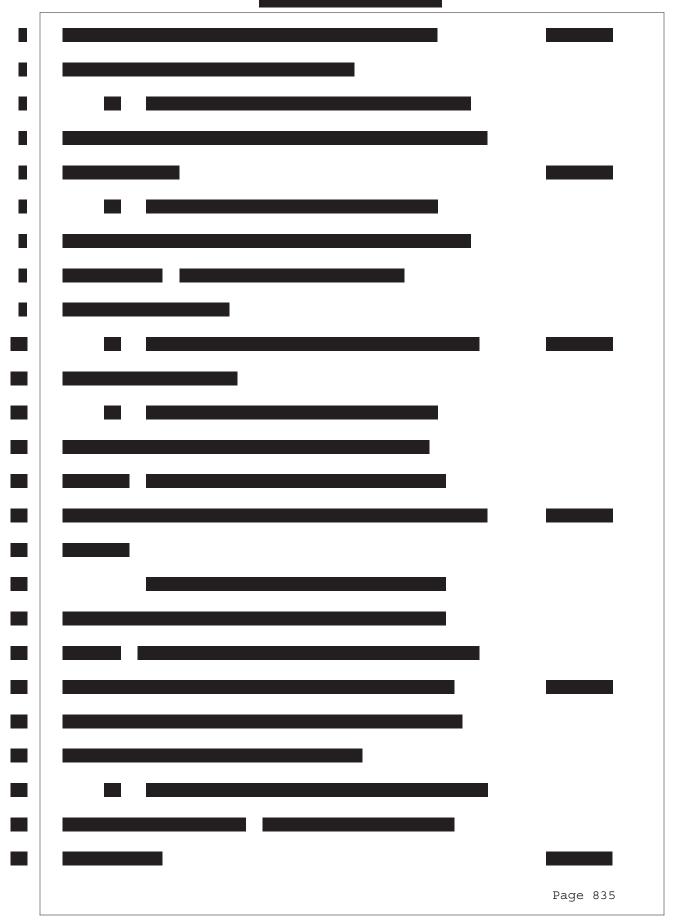
1	necessarily only started after app scoped IDs were	04:31:28
2	implemented.	
3	But do you know about when this process	
4	actually started?	
5	A. I don't have the precise dates as to	04:31:39
6	as to as to when this this activity was	
7	was done, no.	
8	Q. And so far in your description you've	
9	mentioned that this is searching for app scoped	
10	user IDs in data dumps.	04:31:53
11	Do you know if there's been any effort to	
12	look for canonical IDs in data dumps?	
13	A. My understanding is that the same efforts	
14	would have looked for canonical user IDs, although	
15	the challenge there is that which apps they were	04:32:16
16	emitted from is hard to determine.	
17	Q. Do you know whether this effort by the	
18	security teams as it relates to the canonical IDs	
19	was implemented before app scoped IDs started to be	
20	used?	04:32:41
21	A. I'm I'm I think yeah, I'm not	
22	aware of specifically if this activity was	
23	happening happening beforehand. It's it's	
24	it's likely it was happening in some form, but I	
25	I'd be speculating as to exactly what what was	04:33:13
		Page 832

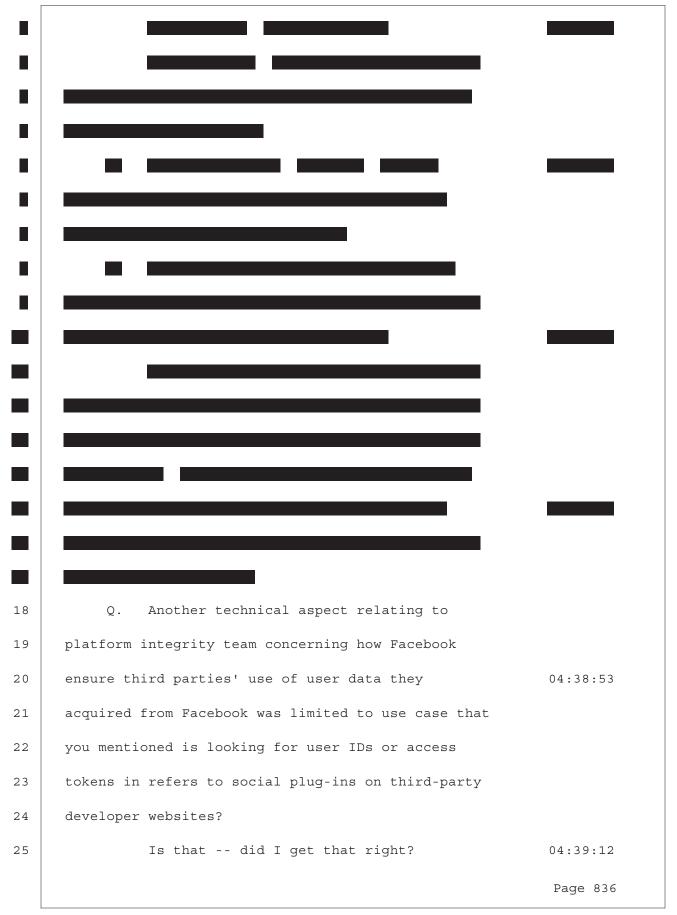
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1	happening in the security teams.	04:33:17
_		04.33.17
2	Q. Let's move on to app review. You	
3	described the process whereby or can you	
4	describe briefly what app review is, and then you	
5	could also say when it started.	04:33:30
6	A. App review is a process by which Facebook	
7	requires app developers to request permission to	
8	use certain features which are known as "reviewable	
9	features" or request certain permissions which are	
10	known as "reviewable permissions" in their	04:33:56
11	application.	
12	Developers ask explain to Facebook why	
13	they want these features and why they want to	
14	request these permissions from users, and then	
15	Facebook determines whether or not, indeed, they	04:34:17
16	can use those features and can request those	
17	permissions from users.	
18	So that's the process of app review. And	
19	app review was instituted for new apps on	
20	April 30th, 2014.	04:34:32
21	Q. Did apps that existed prior to	
22	April 30th, 2014 ever go through app review?	
23	A. Yes. The way app review was instituted	
24	is that the apps created for 2014 I'm sorry	
25	April 30th, 2014 had to go through app review in	04:35:02
		Page 833

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1	order to continue requesting the permissions they	04:35:09
2	were requesting from users once they were upgraded	
3	to API v2.	
4	Q. And who led who participated from	
5	Facebook in the app review process?	04:35:26
6	A. Can you help me understand what you mean	
7	by "participated in"? You mean developers	
8	Q. I'm sorry. That was an unclear question.	
9	Who are the Facebook employees involved	
10	in approving or denying the requested permissions	04:35:43
11	from an app?	
12	A. Those would be members of the developer	
13	operations team.	
		Page 834





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1		
1	A. Yes, that's pretty pretty close, yes.	04:39:16
2	Q. Was that an automated or a manual	
3	process?	
4	A. My understanding is the detection was an	
5	automated process, and when the detection flagged,	04:39:31
6	there was user IDs or access tokens potentially	
7	being admitted, then that was flagged to developer	
8	operations to do an investigation.	
9	Q. Do you know when that process started,	
10	when Facebook started using the process?	04:39:54
11	A. My understanding is that that was	
12	something built around 2011 or 2012.	
13	Q. Do you know who was responsible for	
14	building it around 2011 or 2012?	
15	A. The platform integrity team were	04:40:22
16	responsible for for building that as as	
17	as, you know, it pertains to exactly their their	
18	scope, making sure the information is is	
19	appropriately shared with third parties and so on.	
20	So I I know that they were the team	04:40:39
21	responsible for for building it.	
22	Q. Do you know if records exist of the	
23	developers that were detected through this	
24	automated process as having provided user IDs or	
25	access tokens in refers to social plug-ins on	04:41:03
		Page 837
		I

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1	third-party developer websites?	04:41:07
2	A. This system would have logged that app	
3	time in order to en allow operations team to	
4	perform an investigation, whether or not that	
5	information has been retained, you know, eight or	04:41:25
6	so years later, Facebook standard data retention	
7	policies, you know, are shorter than that.	
8	So it's possible that information has	
9	been retained. I wouldn't know, I'm afraid.	
10	Q. Does that effort continue today, the	04:41:45
11	automated effort to look for such information?	
12	A. My understanding is technical changes	
13	were made to to how access tokens and user IDs	
14	were emitted to third third parties that means	
15	that that detection is no longer needed.	04:42:04
16	Q. Do you know when those technical changes	
17	were made such that Facebook determined the	
18	detection was no longer needed?	
19	A. I want to say those those changes were	
20	roughly made in 2013, '14. But, again, that's	04:42:22
21	that's my understanding of the rough timelines.	
22	Q. When these this automated tool	
23	detected the existence of user IDs or app tokens	
24	as as described, did the tool identify the	
25	individuals the individual Facebook users or IDs	04:42:48
		Page 838

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1	that had been detected?	04:42:52
2	A. I I am afraid the precise nature in	
3	which that tool operated ten years ago, I have a	
4	high-level understanding, which is that it detected	
5	whether or not access tokens and user IDs were	04:43:10
6	being emitted by an app.	
7	Whether or not that tool logged a	
8	specific user IDs is a is a a level of	
9	detail, I I can't answer, I'm afraid.	
10	MR. SCHWING: Matt, we've been going for	04:43:30
11	a while now. I understand you're kind of working	
12	on a you know, a bit of the topic here, but I	
13	wanted to check in with Mr. Cross to make sure	
14	he's how he's doing, if he needs a break, and	
15	kind of, you know, think about when we're going to	04:43:43
16	stop for our next break.	
17	THE WITNESS: Yeah, I'd appreciate a bio	
18	break, if that's if that's possible.	
19	MR. MELAMED: That is. I just wanted to	
20	follow up with a question about permissions, which	04:43:53
21	you had mentioned as, I think, the last of these	
22	techniques. If we can finish those questions now	
23	before the break, that would be great. If not, if	
24	you need the break, I can return to it after. It's	
25	up to you.	04:44:05
		Page 839

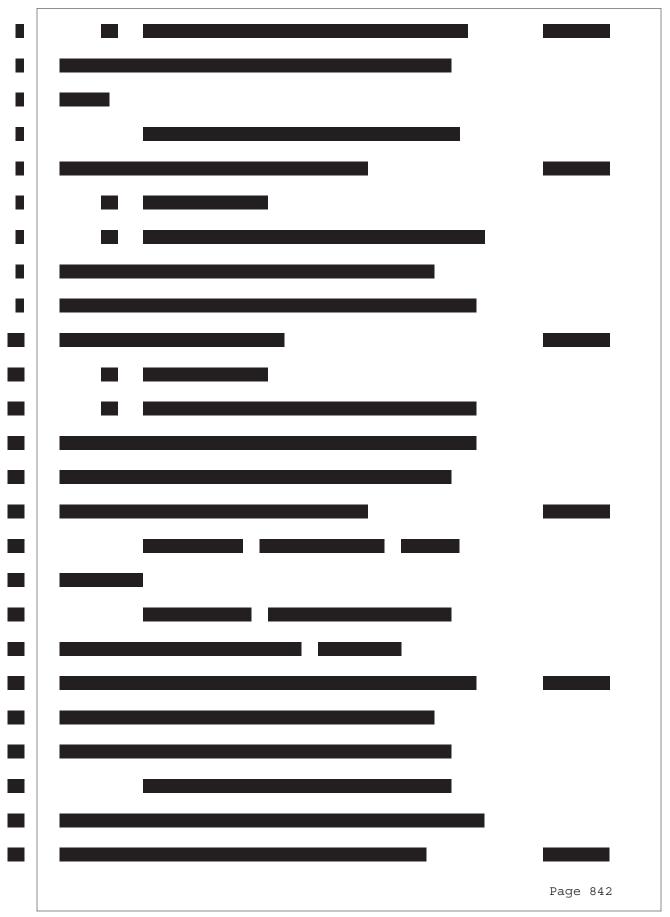
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1	THE DEPONENT: I'll take a break now, if	04:44:06
2	that's okay.	
3	MR. MELAMED: Okay.	
4	THE DEPONENT: And then come back to that	
5	question.	04:44:12
6	MR. MELAMED: Okay. We can go off the	
7	record.	
8	THE VIDEOGRAPHER: Okay. We're off the	
9	record at 4:44 p.m.	
10	(Recess taken.)	04:44:17
11	THE VIDEOGRAPHER: We're back on the	
12	record. It's 4:57 p.m.	
13	Q. (By Mr. Melamed) Mr. Cross, the last of	
14	the techniques we were talking about related to the	
15	technical aspects of how the how platform	04:57:29
16	integrity team ensured third parties' use of user	
17	data they acquired from Facebook was limited to the	
18	use case or permissions.	
19	Do you remember that?	
20	A. Accessing permissions, yeah.	04:57:46
21	Q. When were permissions implemented?	
22	A. Permissions as we as they're known	
23	today were first introduced in May 2010.	
24	Q. And what do you mean by "known today"?	
25	A. So these are permissions in the in the	04:58:13
		Page 840

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1	sense that these are things that developers can	04:58:14
2	request from users and then once the user is	
3	granted those permissions, then the app has access	
4	to information that are covered by the permissions	
5	that the users have granted to the application.	04:58:31
6	Q. And how did those permissions relate to	
7	the use case of the app?	
8	MR. SCHWING: Object to form.	
9	THE DEPONENT: So a permission would gain	
0	a particular piece of information or set of	04:58:51
1	information that an app could have access to, and	
2	typically those permissions would be requested by	
		Page 841

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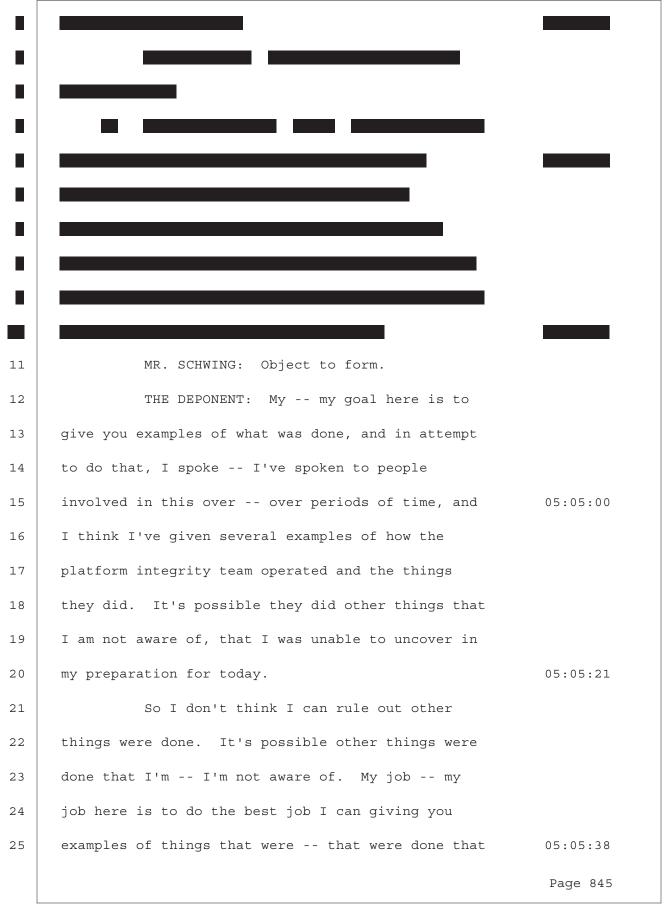


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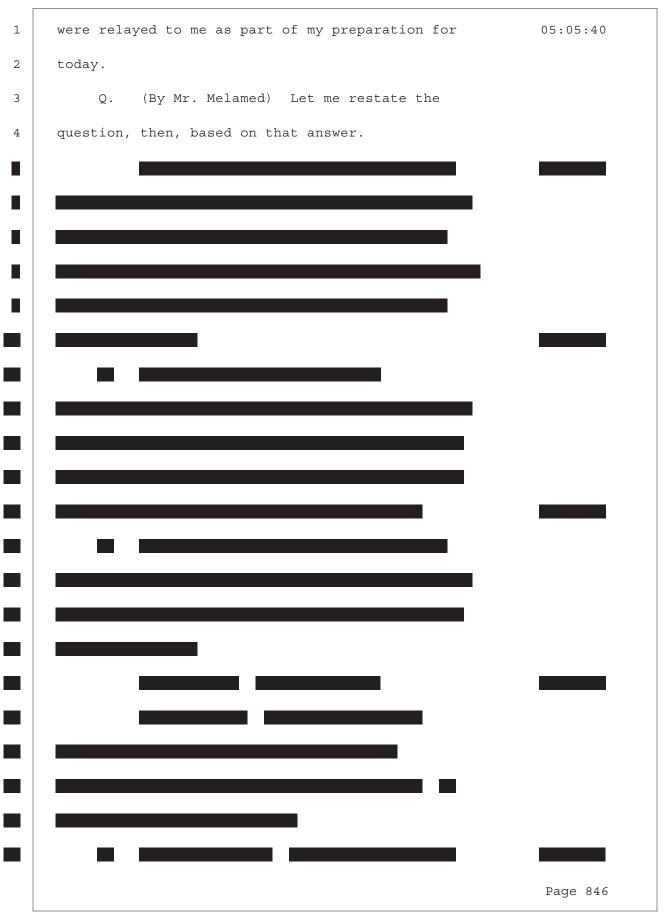


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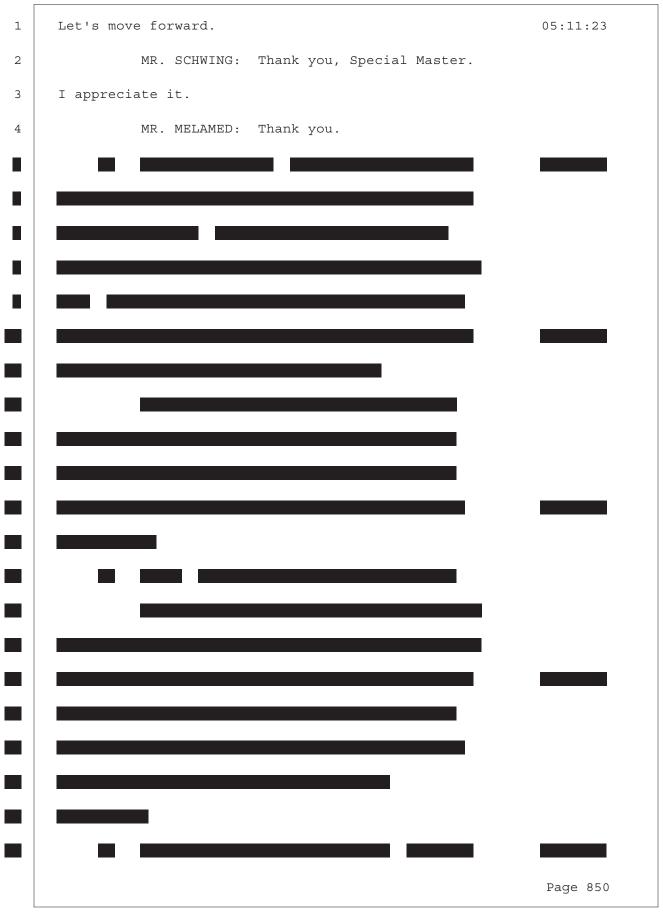


Q. (By Mr. Melamed) I just want to read for	
the record the representation that was made by	
counsel before talking to you about this subject.	
MR. MELAMED: And I'm not doing this to	05:09:29
start a fight, Austin. You know, obviously you can	
respond.	
But the paragraph that was in the letter	
written on June 3rd specifically regarding your	
preparation to testify was with respect to topic	05:09:4
2d, which relates to "how Facebook ensured third	
parties' use of such data or information was	
limited to the use case." For avoidance of doubt,	
Facebook again writes that "while Ally Hendrix is	
prepared to testify on most aspects of topic 2d,	05:09:59
there is a technical aspect relating to the	
platform integrity team that Mr. Cross is prepared	
to testify about. We are uncertain why you are	
pushing back on this issue. As mentioned above,	
Facebook is simply using its best efforts to	05:10:13
	Page 84

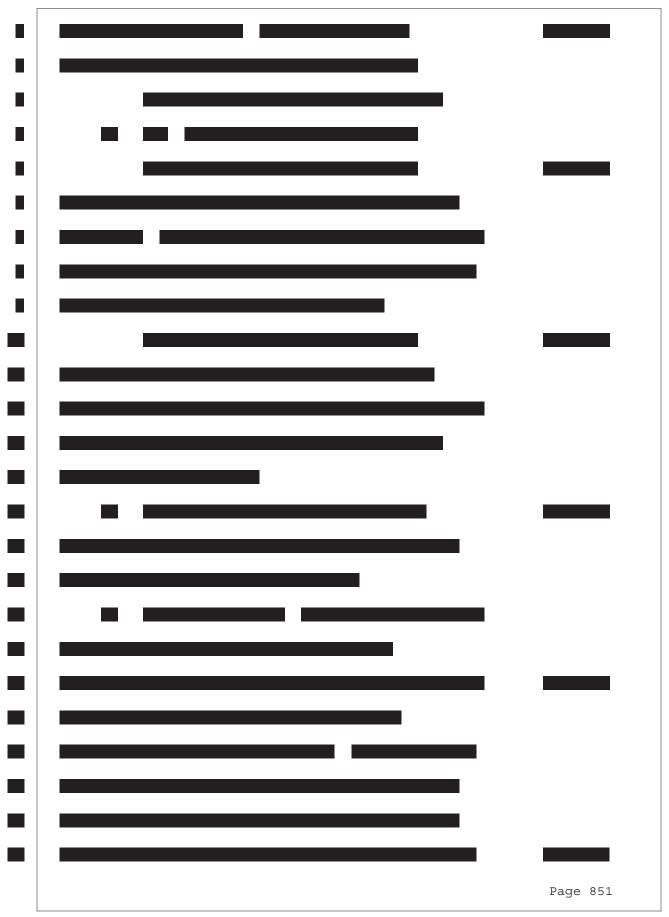
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1		
1	identify the best possible witnesses to testify on	05:10:14
2	plaintiffs' topics."	
3	So I just want to state for the record	
4	that that's why we were pushing on these topics.	
5	That's why I've asked the follow-ups that I asked.	05:10:23
6	And we will seek additional testimony regarding	
7	these topics so that we get the answers to those	
8	questions.	
9	MR. SCHWING: And, Matt, I will not argue	
10	with you, and I'm happy to address that, you know,	05:10:39
11	at at an appropriate time. We've indicated in	
12	correspondence that Mr. Cross will be prepared to	
13	discuss and I'm quoting "generally the steps	
14	the platform integrity team undertook to detect	
15	misuse." You're, of course, free to follow up with	05:10:58
16	further discovery.	
17	I appreciate you raising your concerns.	
18	I'm happy to speak with you about it and and	
19	and work through the issues.	
20	MR. MELAMED: Thank you. I just I	05:11:12
21	appreciate that. I just want to note that the word	
22	"generally" is not in the uttered in the	
23	reference.	
24	SPECIAL MASTER GARRIE: This is Special	
25	Master Garrie. Both parties have been heard.	05:11:21
		Page 849

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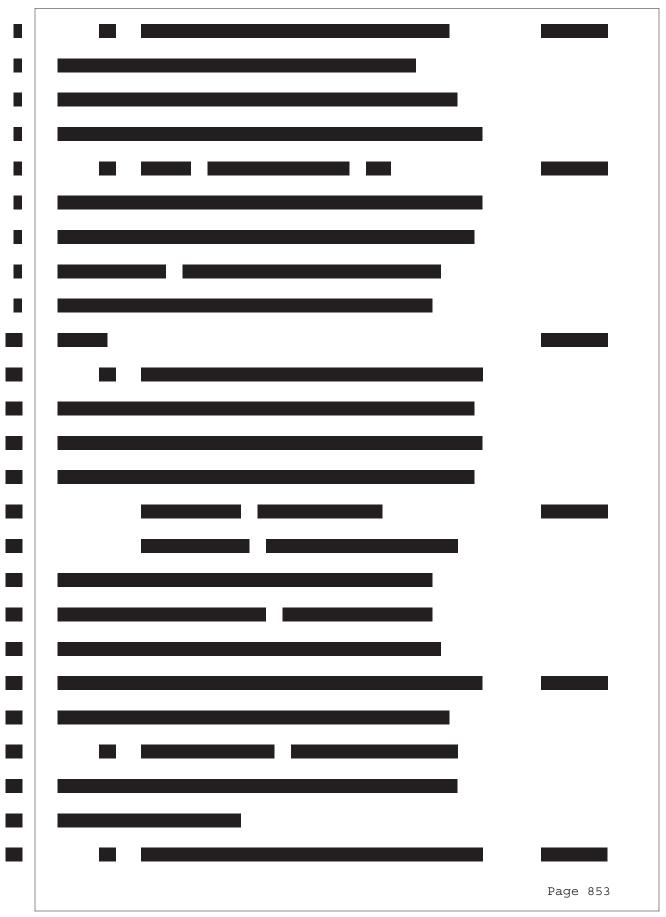
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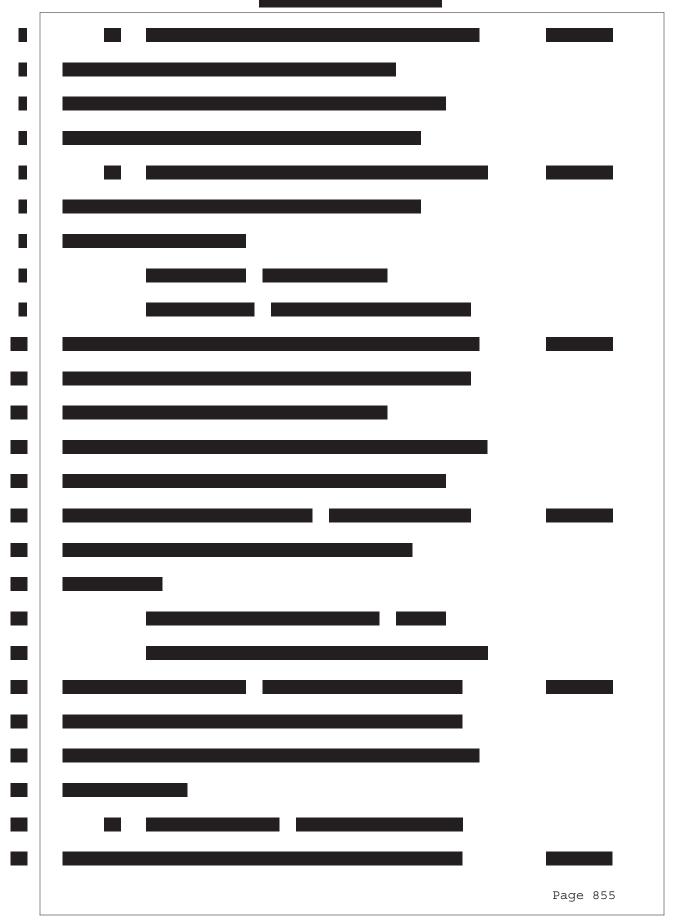


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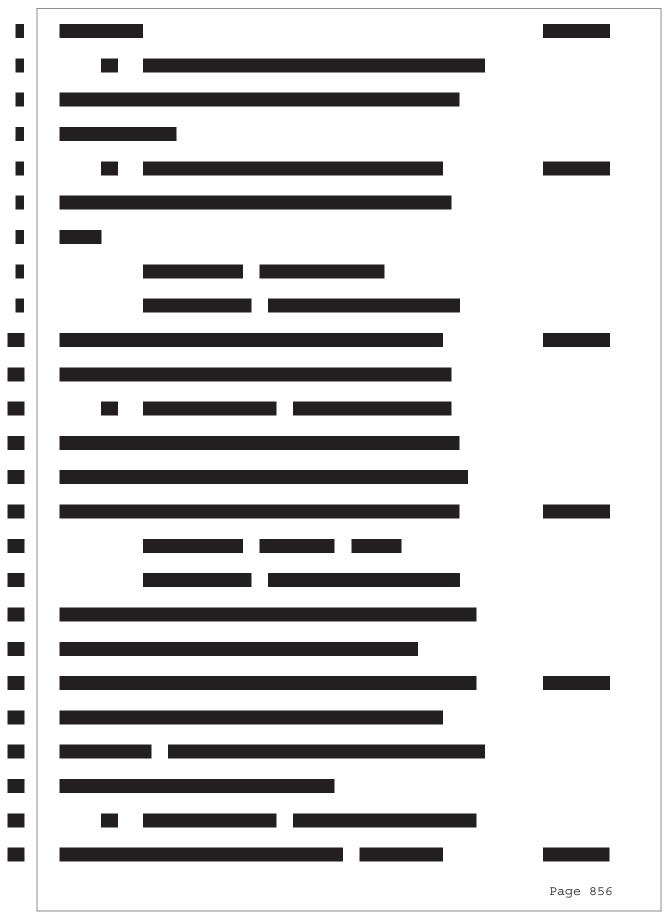


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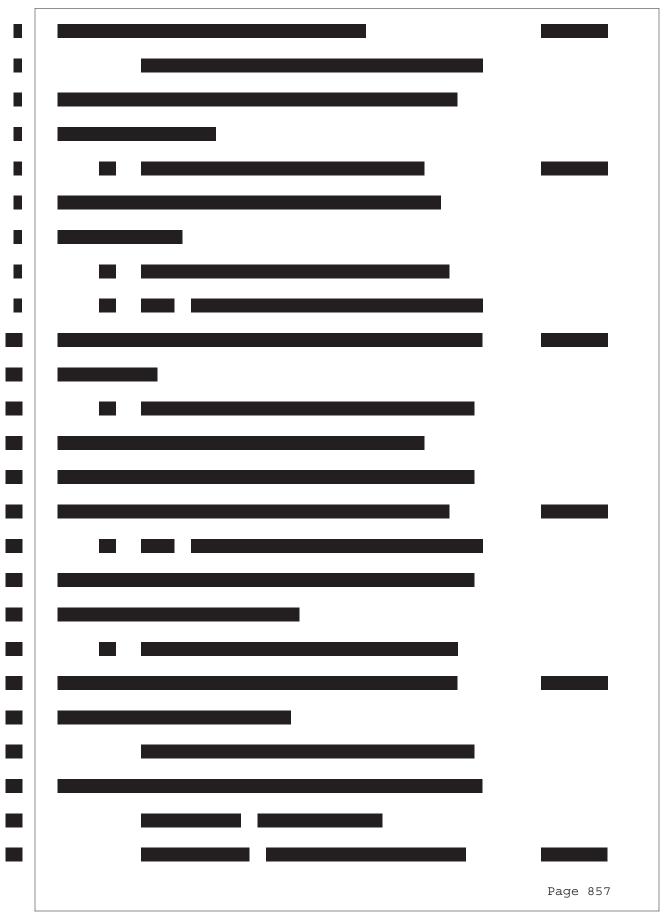




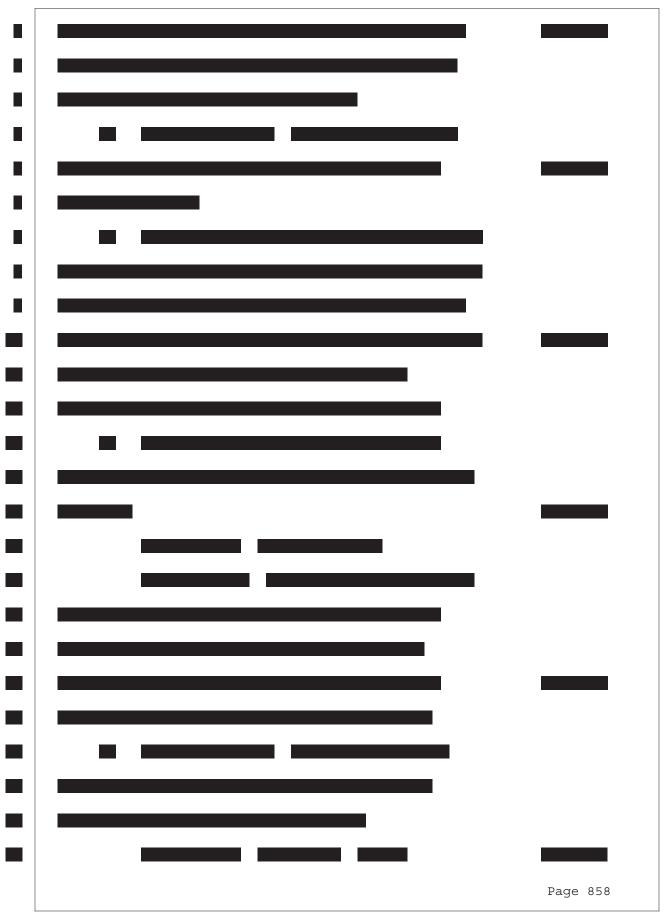
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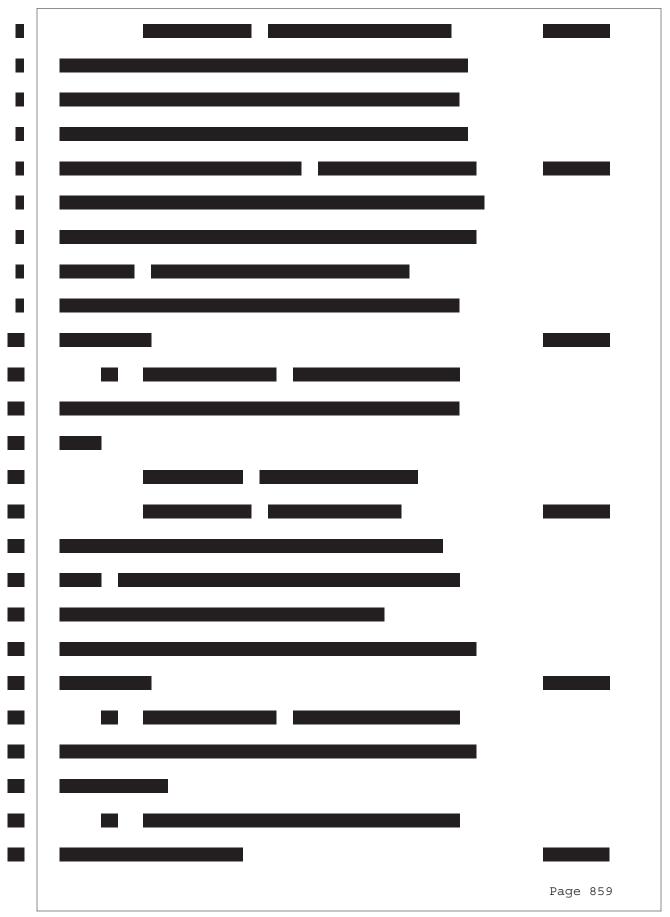
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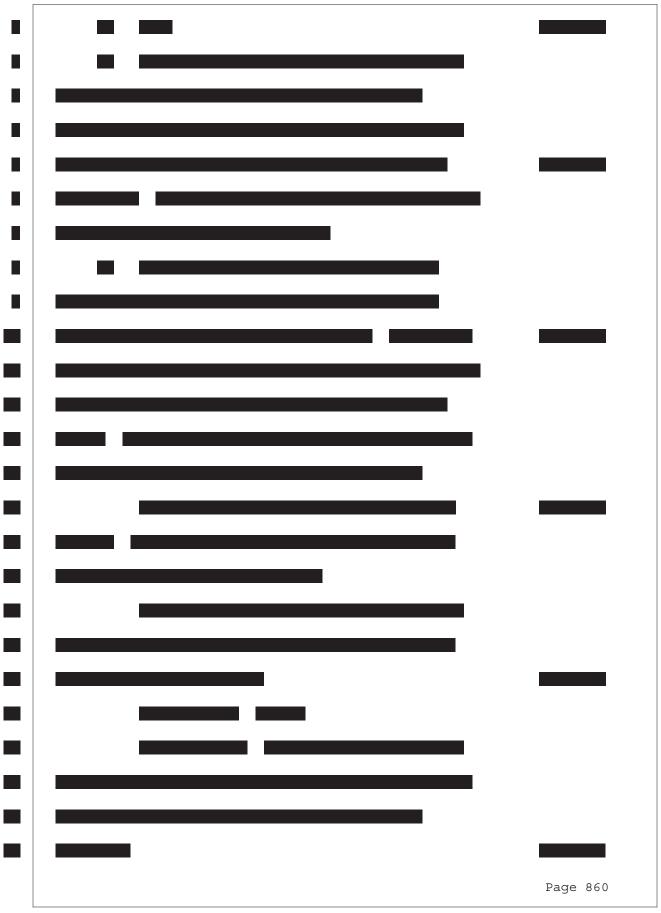
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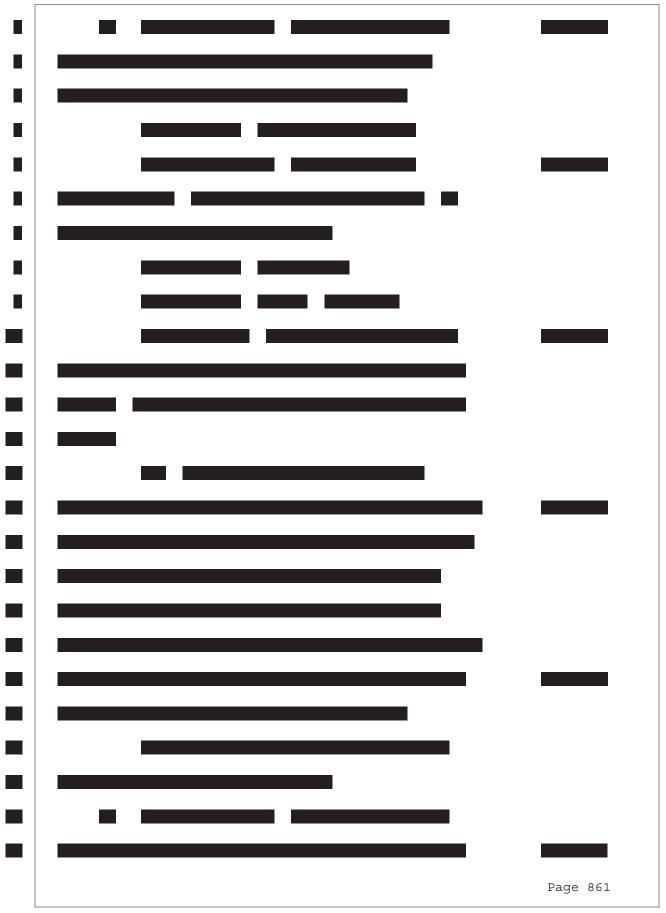
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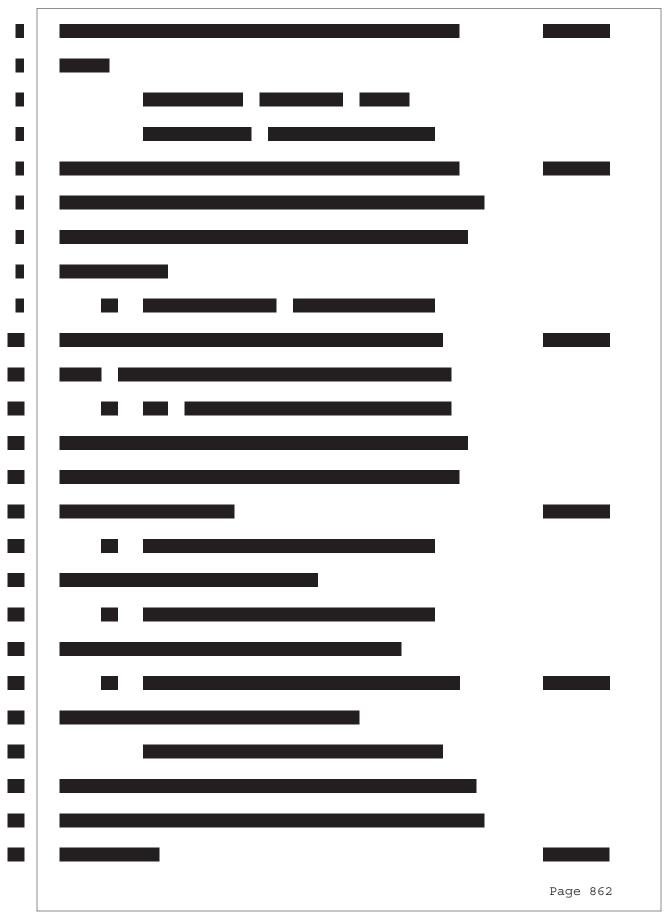
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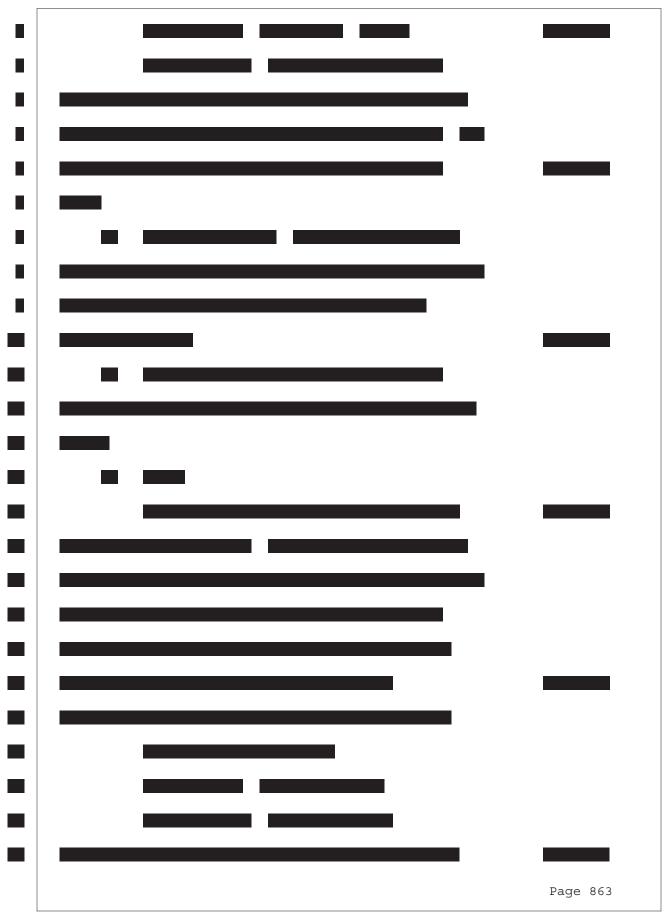
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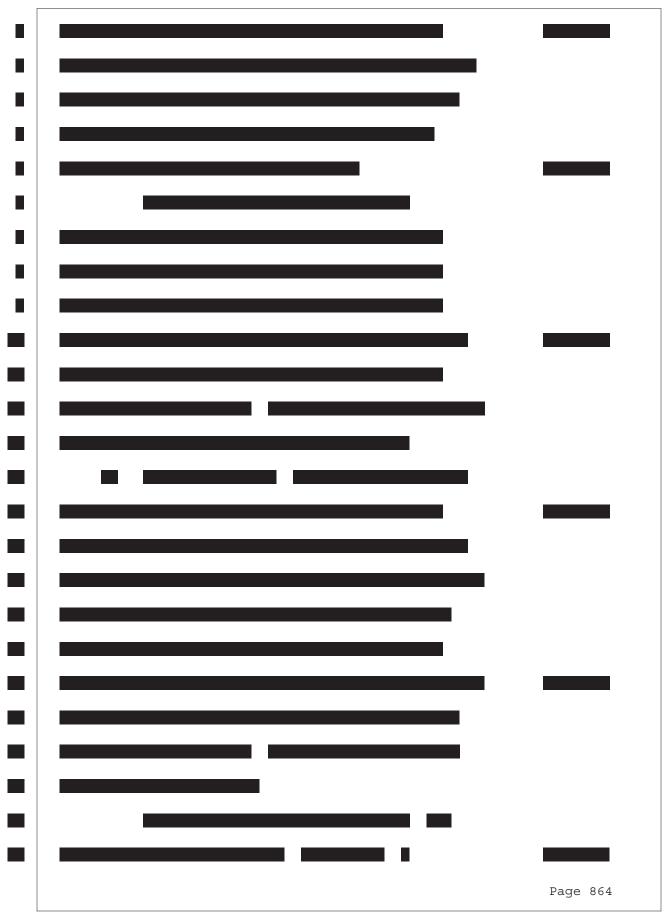
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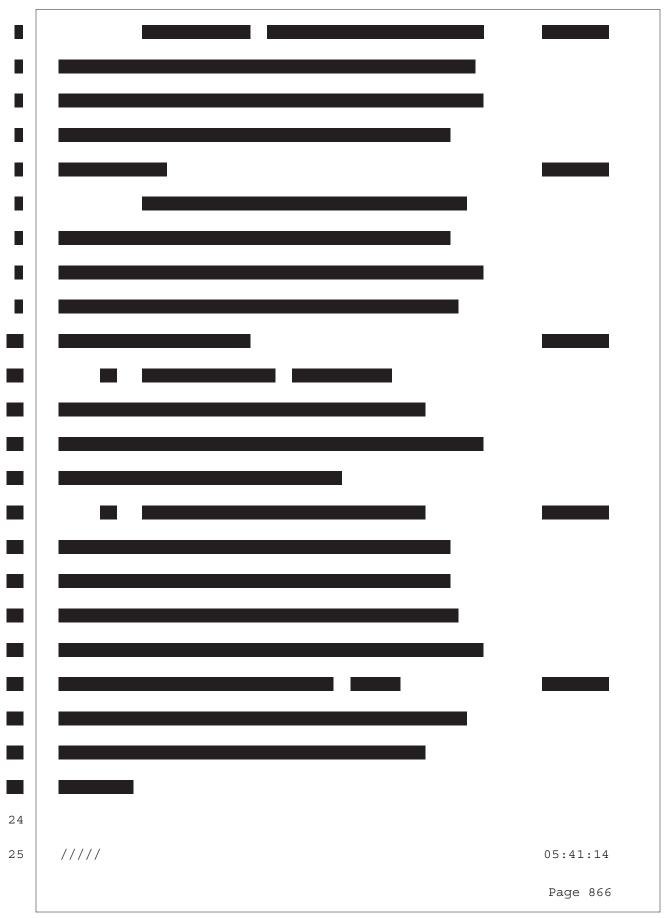
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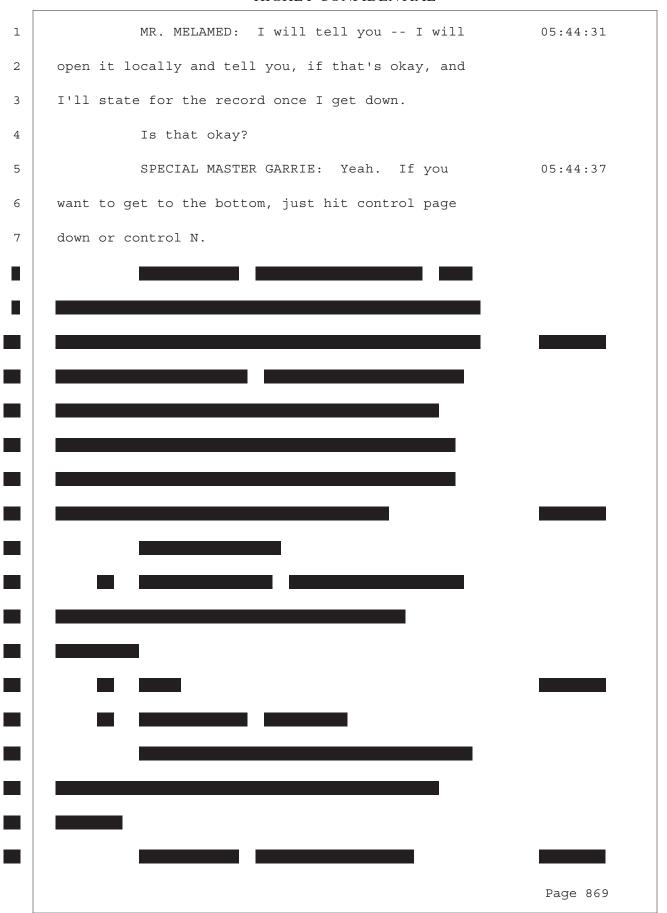
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1	(Exhibit 425 was marked for	05:41:14
2	identification by the court reporter and is	
3	attached hereto.)	
4	MR. MELAMED: Just introduced what's been	
5	marked as Exhibit 325 I'm sorry. 425. My	05:41:41
6	mistake.	
7	Q. (By Mr. Melamed) And just for the	
8	record, Exhibit 425 was provided to us, to	
9	plaintiffs, by counsel for Facebook. I don't	
10	anticipate that you've seen this before, Mr. Cross.	05:41:55
11	It's possible you have, but I just want to ask you	
12	a couple questions about it.	
13	And it's probably going to be easiest if	
14	I share my screen. It's a very large a very	
15	lengthy Excel spreadsheet. You can go ahead and	05:42:13
16	look at it. I don't mean to cut you off from	
17	familiarizing yourself from it.	
18	THE DEPONENT: Sorry. Where would I	
19	access this? Are you just going to share your	
20	screen or	05:42:33
21	MR. MELAMED: Okay. I will share my	
22	screen. But it should be in marked exhibits on	
23	in Exhibit Share for deposition of Simon Cross,	
24	Volume 4.	
25	Austin, are you able to see it?	05:42:46
		Page 867

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1	MR. SCHWING: I can.	05:42:51
2	Simon, do you have the Egnyte page up?	
3	THE DEPONENT: Yes, I do. Exhibit 3	
4	MR. SCHWING: The top you should see	
5	things that say Simon Cross. It would be the top	05:43:02
6	one, I believe.	
7	THE DEPONENT: Yeah, that's it.	
8	MR. MELAMED: Yes. As I mentioned, this	
9	is really, really long. I'm going to direct you	
10	very specifically to a few lines. I just want to	05:43:13
11	understand if you're able to provide answers. If	
12	you're not, that's fine.	
13	So I'm going to scroll down to line	
14	36,608.	
15	(Discussion off the stenographic record.)	05:43:28
16	MR. SCHWING: Matt, if you're trying to	
17	demonstrate your your diligence by saying you've	
18	reviewed 36,000 rows of this, I am impressed.	
19	MR. MELAMED: I appreciate that you think	
20	that I reviewed 36,000 rows of this table that was	05:43:56
21	provided, I think, last night.	
22	MS. WEAVER: I'll take credit for it.	
23	SPECIAL MASTER GARRIE: Hey, Counsel.	
24	Can I ask a question?	
25	What are the column values for A?	05:44:23
		Page 868

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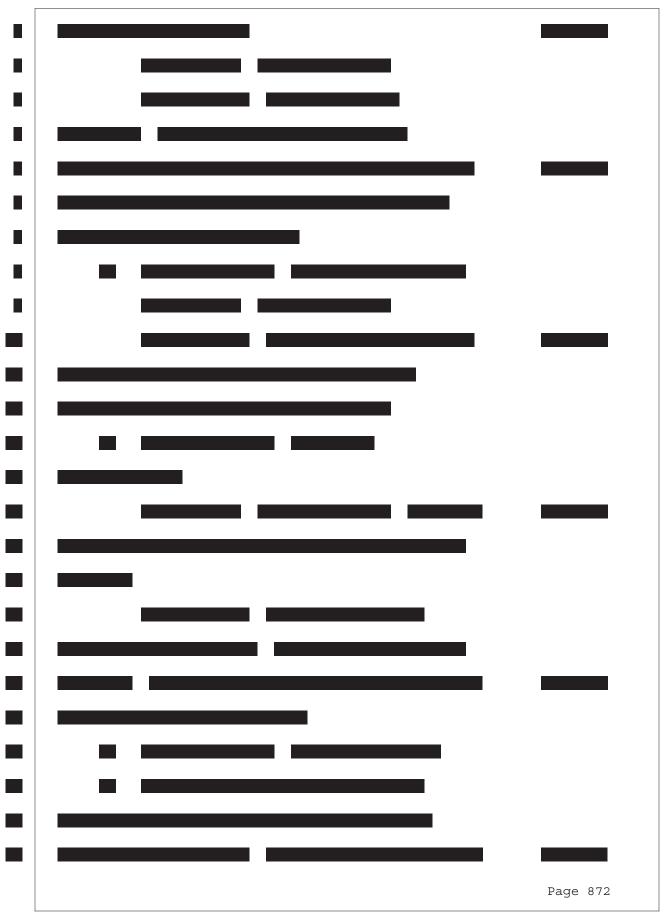


6	Do you see that?	
7	A. I do see that.	
8	Q. Do you know if these reflect the Did	
9	table that you testified about before?	
10	MR. SCHWING: I'm just going to state for	05:46:40
11	the record that we didn't receive these in advance	
12	of the deposition. I understand you represented	
13	that this was provided last night, Matt, but just	
14	to be clear, the witness has not had a chance to	
15	look through this.	05:46:51
16	MR. MELAMED: Let me you're right,	
17	Austin. Let me correct the record. This was not	
18	received last night. It was received Thursday.	
19	That was my mistaken.	
20	I am only asking about this because of	05:46:58
21	Mr. Cross's testimony before about the Did table.	
22	It's just you know, and I understand that	
23	Mr. Cross likely has not reviewed this, but I can	
24	confirm that.	
25	So I'll ask that, but I understand I	05:47:12
		Page 870

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1	understand the point you're making, Mr. Schwing.	05:47:16
2	Q. (By Mr. Melamed) Mr. Cross, have you	
3	reviewed this table before?	
4	A. I have not reviewed this table before.	
5	Q. Are you do you know whether the rows	05:47:26
6	36,608 through -612 are related to the Did table	
7	you described in your testimony today?	
8	MR. SCHWING: It's outside the scope of	
9	the deposition. Object to form.	
10	THE DEPONENT: I cannot ascertain if	05:47:48
11	these relate to the the Can and Did tables I've	
12	previously talked about. I cannot ascertain that	
13	from this.	
		Page 871

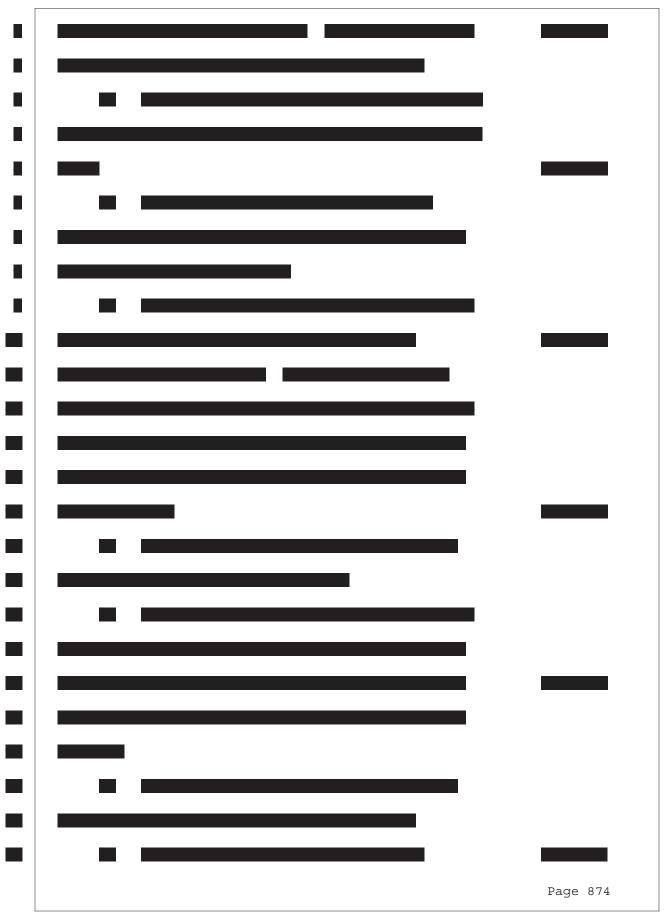
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2	MR. MELAMED: Thank you. You can put	
3	that exhibit away if you have it open.	
4	Q. (By Mr. Melamed) We were talking before	
5	we returned to the Did table for a minute about the	05:50:34
6	manner by which third parties could access user	
7	data, and we talked about the rest API and the FQL	
8	API, and we've talked periodically about	
9	Open Graph, correct?	
10	A. Well, we talked about the Graph API. We	05:50:49
11	haven't talked about Open Graph.	
12	Q. Thank you for the correction. We talked	
13	about the Graph API.	
14	During what period of time did third	
15	parties access user data via Facebook login?	05:50:59
16	MR. SCHWING: Object to form.	
		Page 873

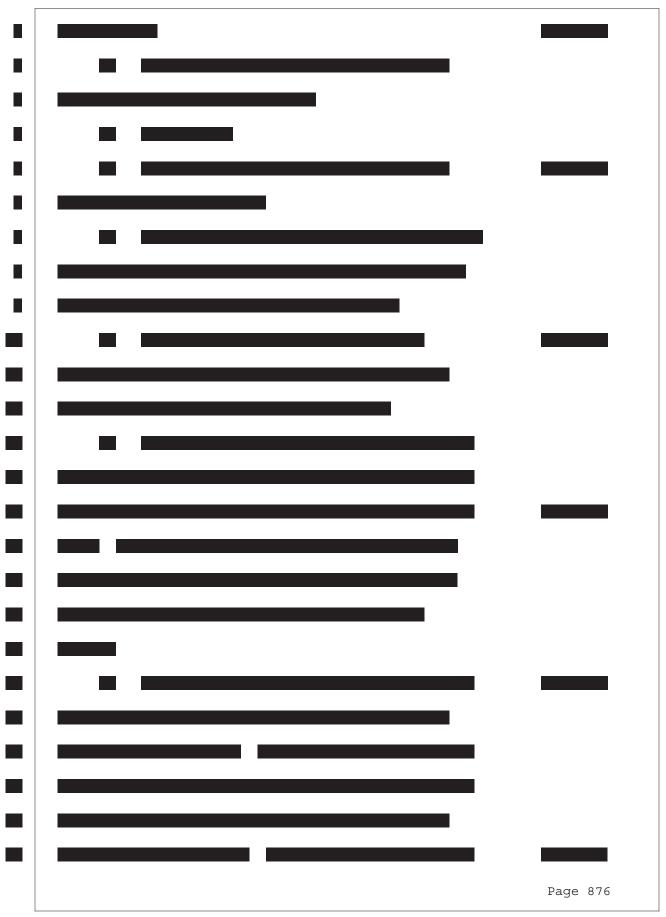
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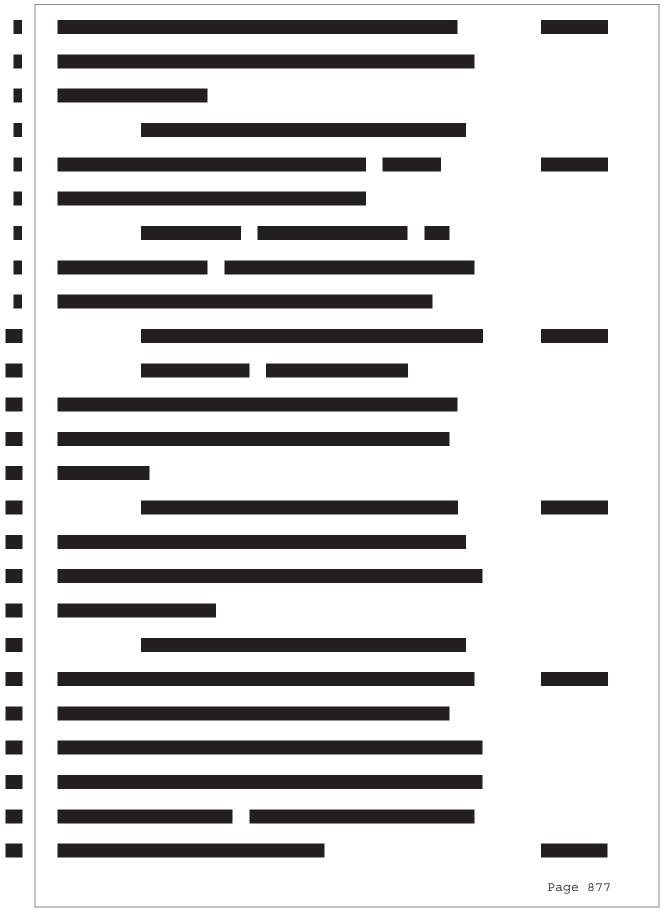
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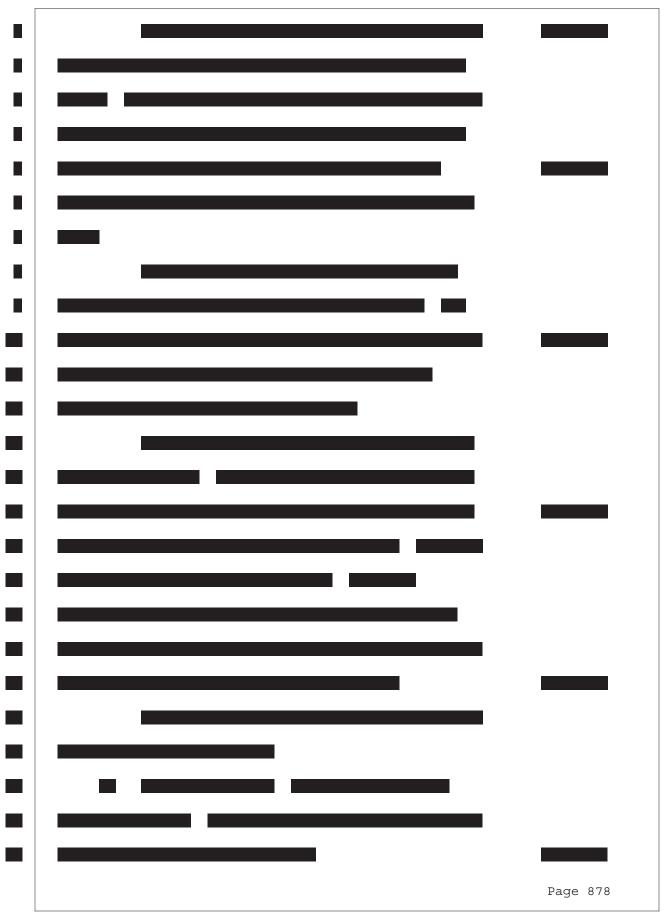
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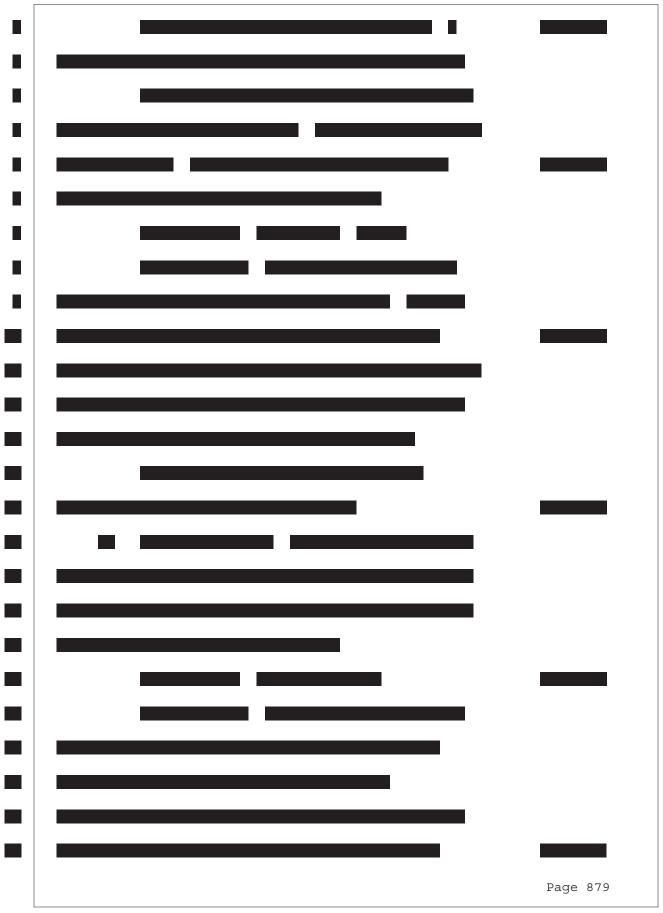
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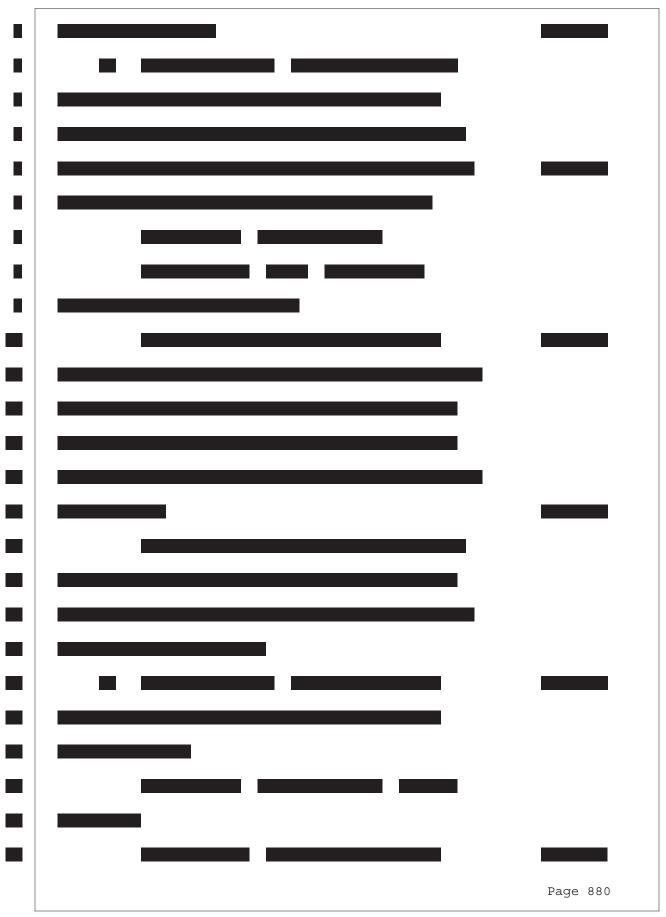
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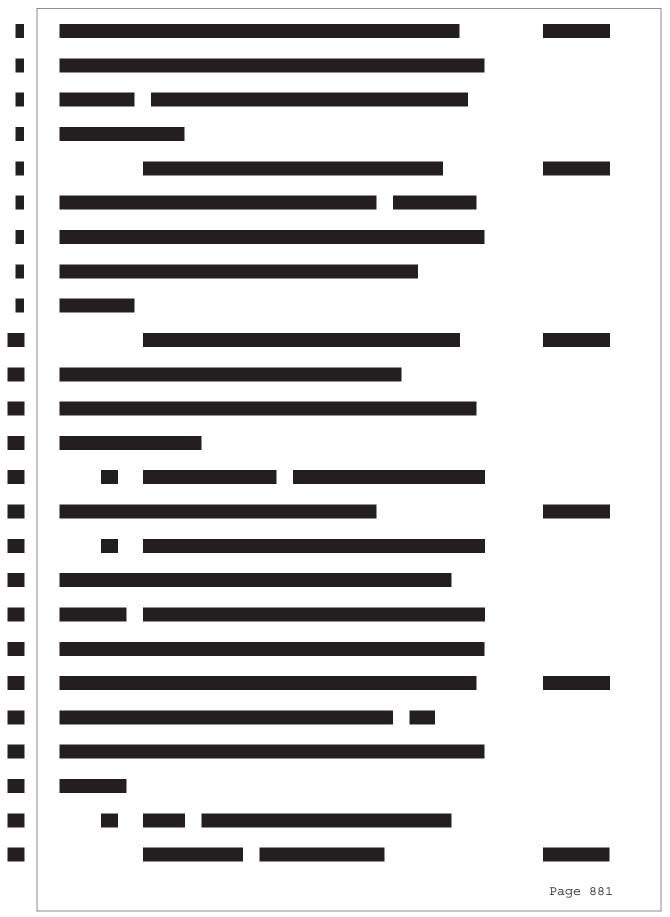
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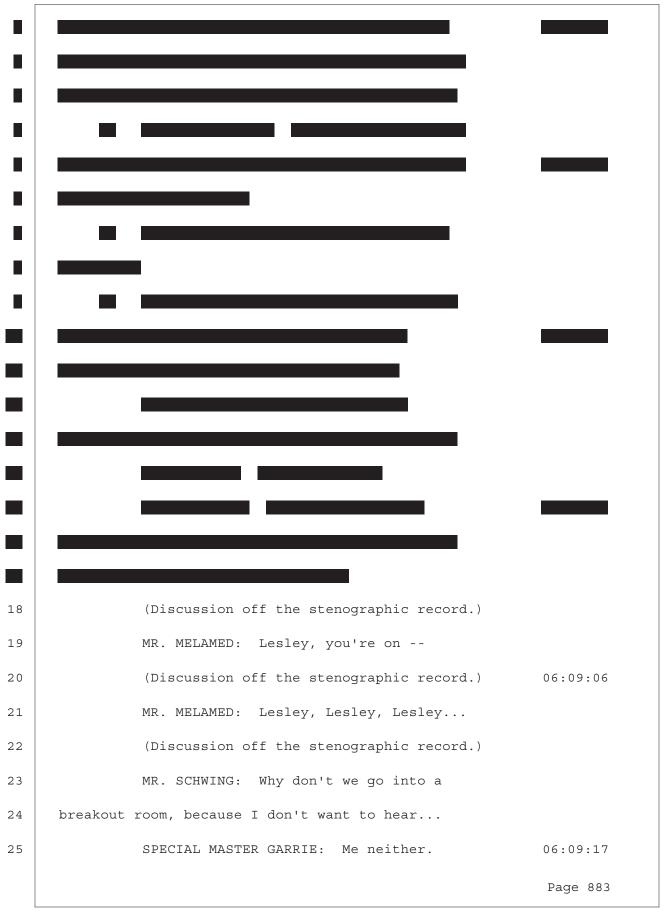


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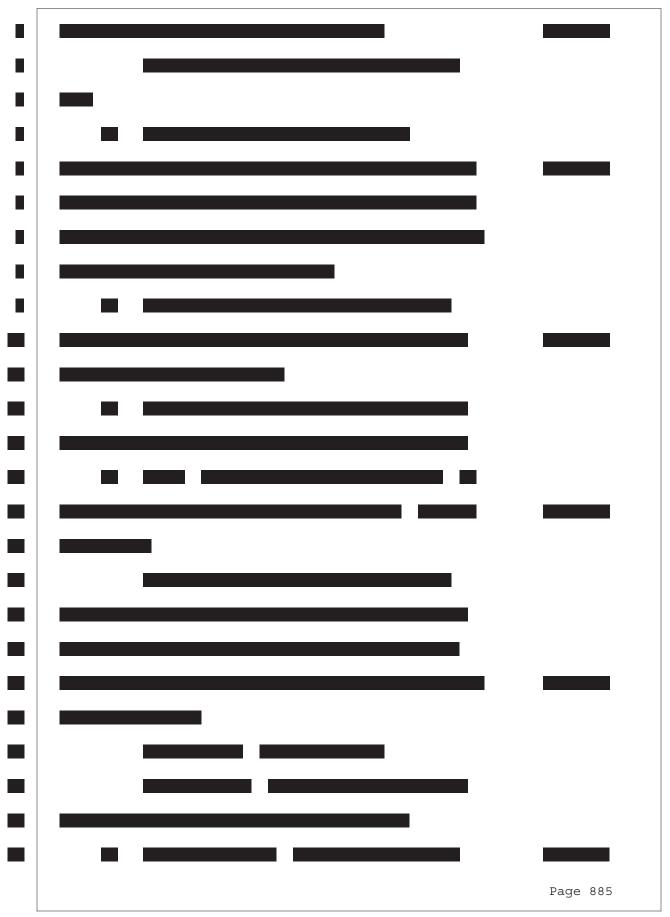




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1	MR. MELAMED: Can we go off the record.	06:09:19
2	MR. SCHWING: Let's go into a breakout	
3	room.	
4	SPECIAL MASTER GARRIE: Off the record,	
5	mute her.	06:09:20
6	MR. MELAMED: Thank you, John. Can you	
7	mute can you mute Lesley.	
8	MR. SCHWING: I'm going into the breakout	
9	room.	
10	MR. MELAMED: Thank you, Austin.	06:09:20
11	THE VIDEOGRAPHER: Did you want to go off	
12	the record? I'm sorry.	
13	THE COURT REPORTER: Yes.	
14	THE VIDEOGRAPHER: Thank you.	
15	Off the record. It's 6:09.	06:09:39
16	(Recess taken.)	
17	THE VIDEOGRAPHER: We are back on the	
18	record. It's 6:53 p.m.	
		Page 884

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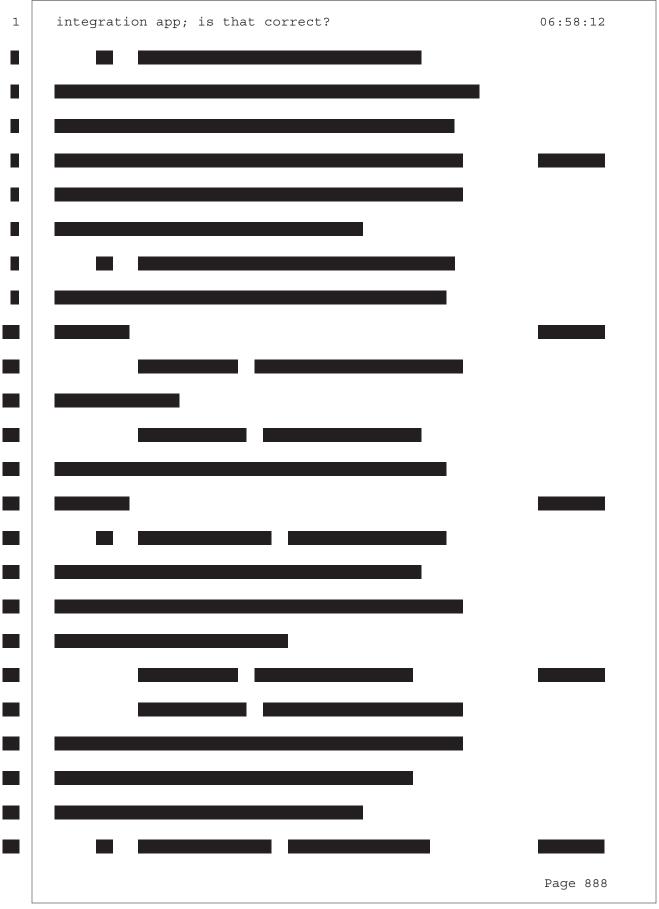


Q. (By Mr. Melamed) Sure.	
So let's make it more concrete. Are you	
aware whether Huawei was one of the partners, the	
integration partners?	
A. There was a number of integration	06:55:55
partners. I I don't recall all of them in	
particular. That information is available in the	
interrogatory responses if you if you want to	
refer to those.	
Q. Okay. So I'm going to represent to you	06:56:07
that Huawei was identified as one of those	
partners.	
So if you engaged with a Huawei device	
and said, yes, I'd like to use Facebook on this	
device, did Facebook track the API calls that were	06:56:25
	Page 886

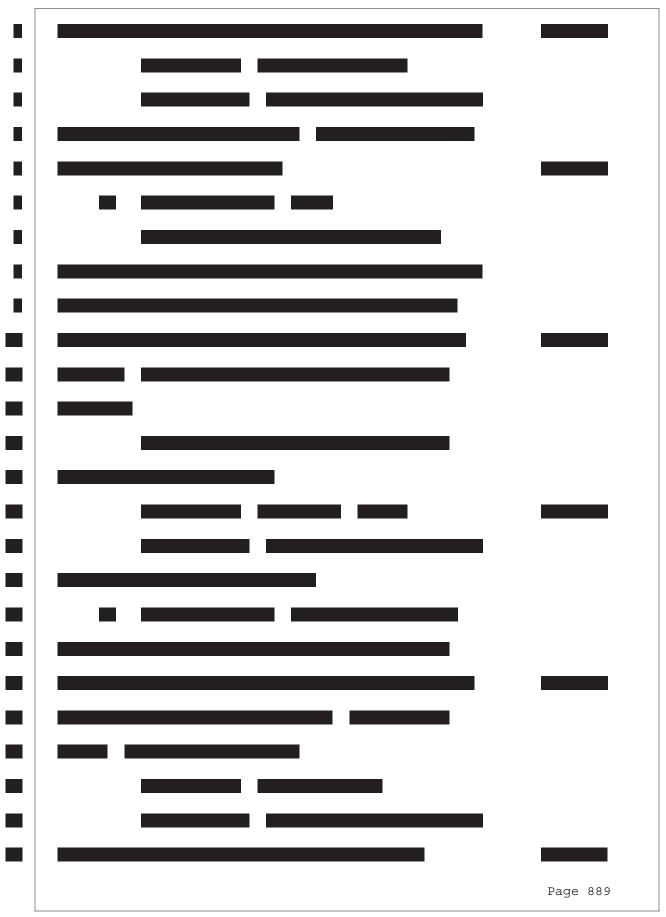
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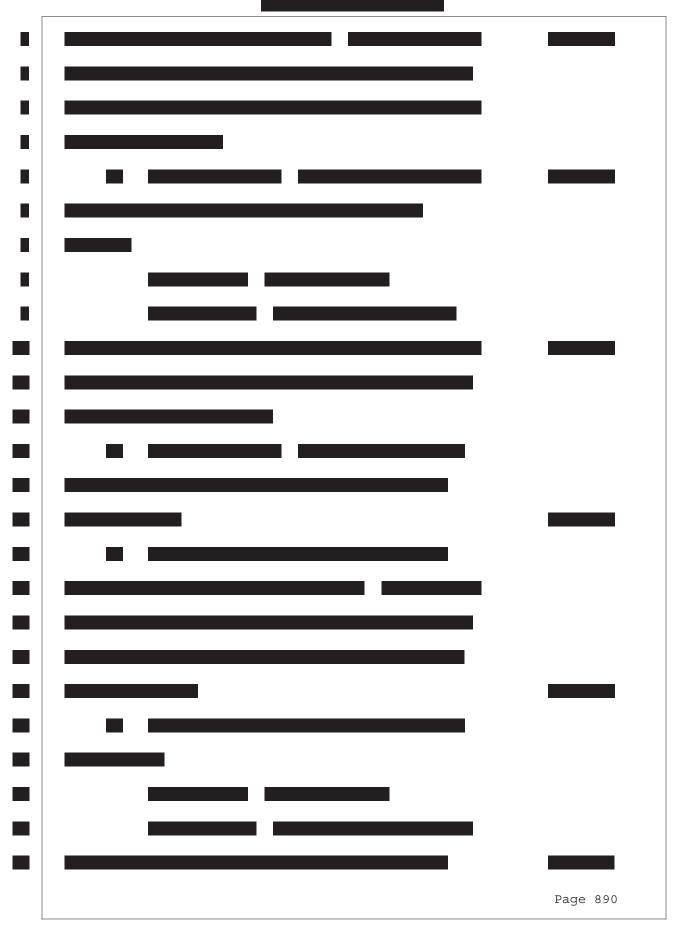


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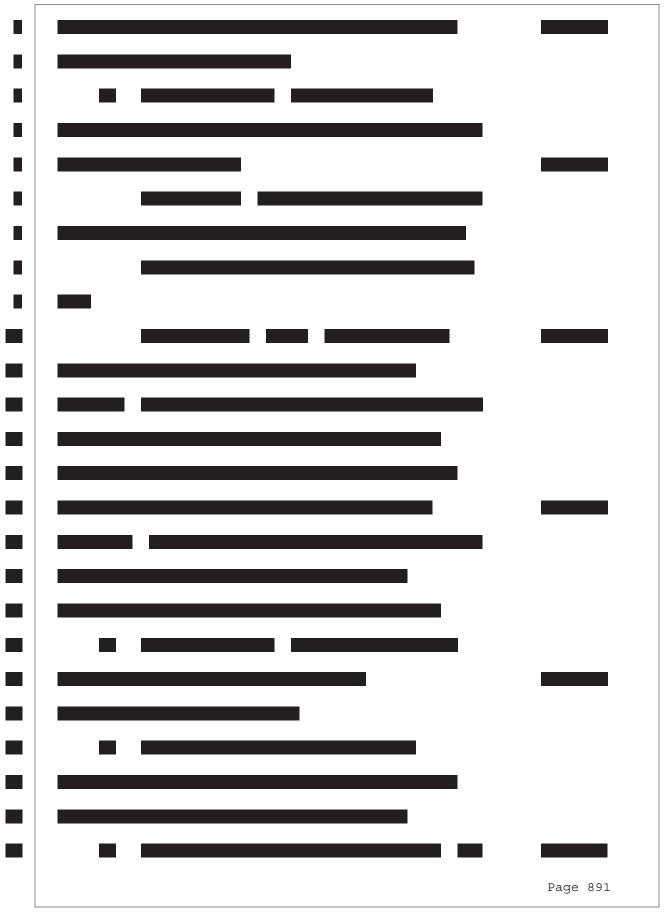


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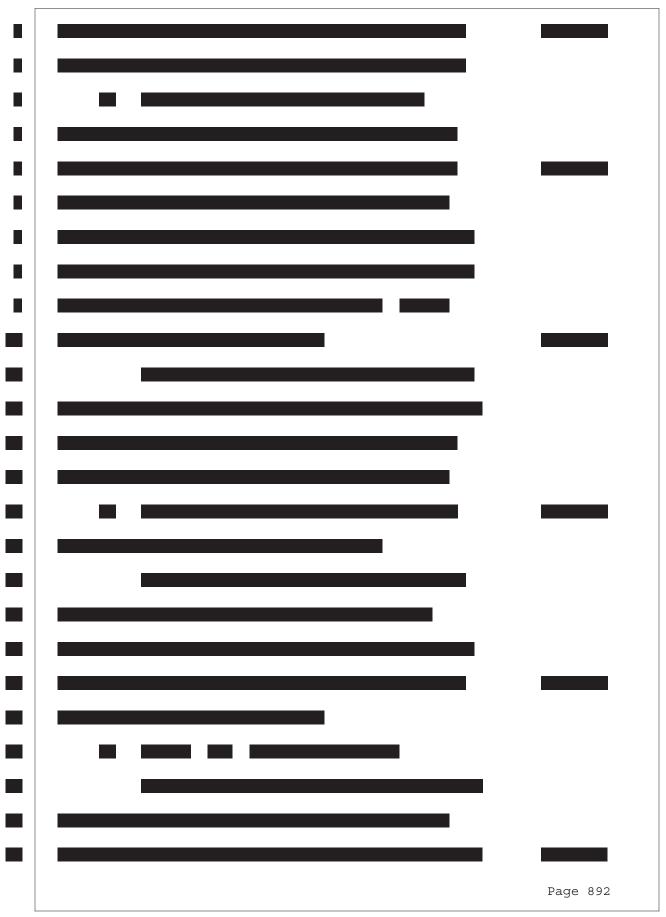




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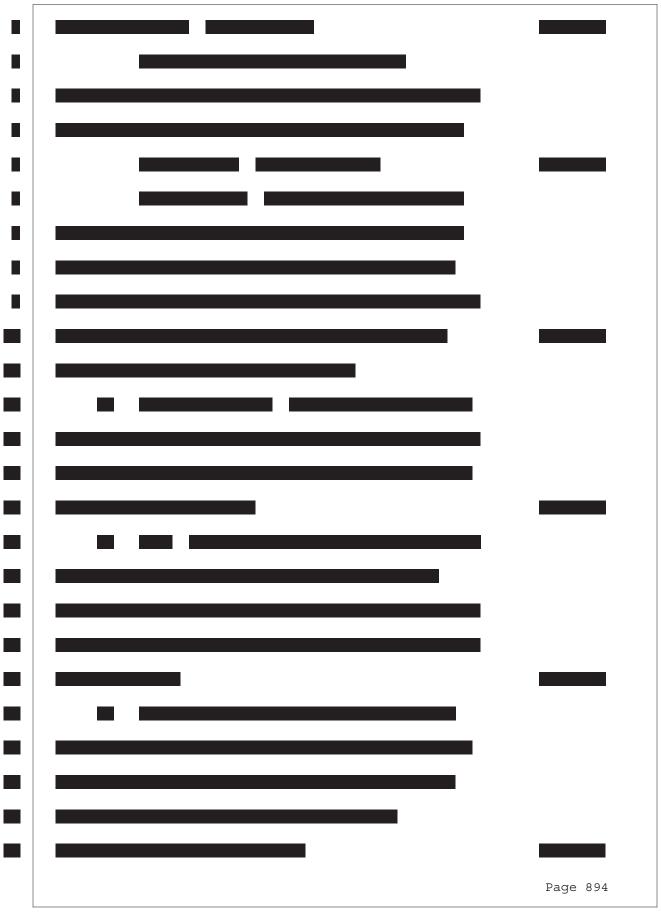
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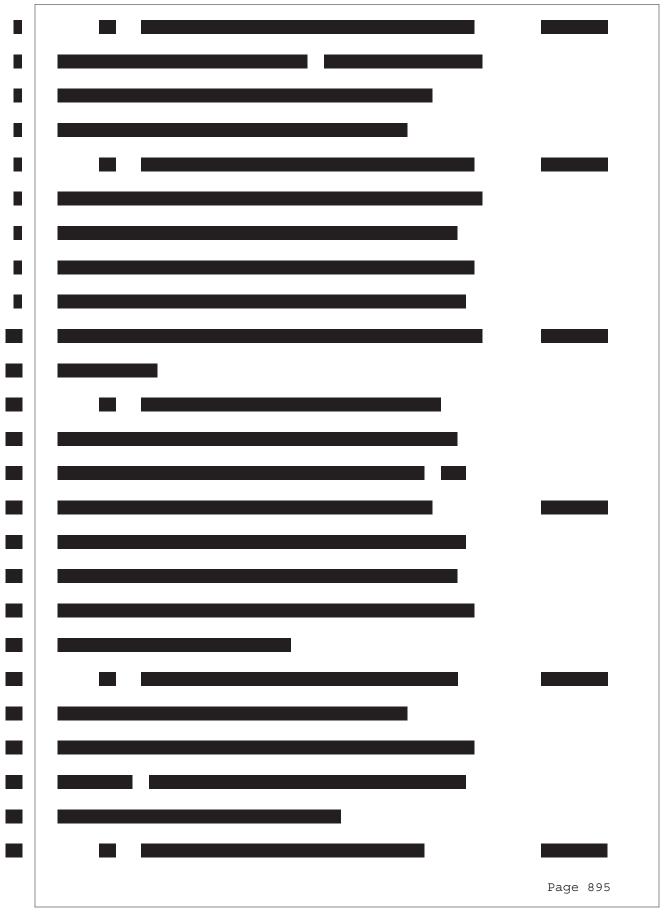
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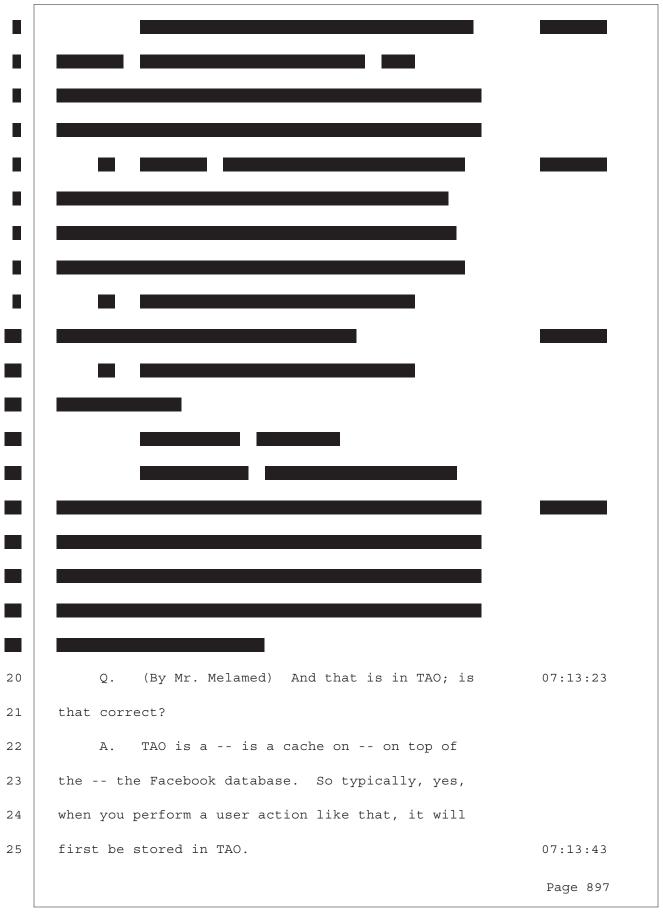
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_		
1	Q. And then it would also be stored in Hive;	07:13:46
2	is that right?	
3	MR. SCHWING: Object to form.	
4	THE DEPONENT: So generally, Hive would	
5	also include the fact that you clicked on the Like	07:14:03
6	button, yes.	
7	Q. (By Mr. Melamed) Did Facebook ever	
8	collect information about a user when the user	
9	logged in to Facebook from a mobile device?	
10	Sorry. Let me restate that.	07:14:23
11	Did Facebook collect user's ever	
12	collect a user's phone number when the user logged	
13	in from a mobile device?	
14	A. Sorry. Let's I'm not sure I	
15	understand again, understand the question.	07:14:44
16	If a user logged in to to to what?	
17	Q. To Facebook. If a user logged in to	
18	Facebook from their mobile device, did Facebook	
19	ever collect that user's phone number via that	
20	interaction without without explicitly asking	07:15:02
21	the user to collect that information?	
22	A. So, again, are you talking about where a	
23	user logs in to Facebook using a phone number?	
24	Q. No. Just logs in without using a phone	
25	number, using the user name and password that's not	07:15:22
		Page 898

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1	a phone number, from a mobile device. Did Facebook	07:15:26
2	ever collect, as part of that, the phone number	
3	that the user had logged in the phone number of	
4	the device that the user had logged in?	
5	MR. SCHWING: Object to form.	07:15:40
6	THE DEPONENT: Yeah, I'm I'm not	
7	certain that that I don't know if that's	
8	happened or not. It's possible that mobile the	
9	mobile operating system or the carrier transmits	
10	some of that information. I'm I'm not an expert	07:16:02
11	in in how Facebook's login processes work and	
12	what what information is exchanged with Facebook	
13	from the device or the carrier that they're logging	
14	in on.	
15	Q. (By Mr. Melamed) I'm asking because I'm	07:16:16
16	trying to establish whether Facebook collected	
17	these things and then, if so, where they tracked	
18	them. And that's the connection to the topic, just	
19	to be clear.	
20	Did Facebook collect users' mobile device	07:16:30
21	IDs?	
22	A. Can you be more specific, "mobile device	
23	IDs."	
24	What do you mean by that? Sorry.	
25	Q. Did Facebook ever collect a user's IDFA	07:16:59
		Page 899

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1	when the user logged in to Facebook using their	07:17:08
2	mobile device?	
3	A. By "IDFA," you're referring what are	
4	you referring to with "IDFA"? You're referring to	
5	Apple's Apple's identifier, which is specific to	07:17:25
6	iOS?	
7	Q. Let's let's start there. Did Facebook	
8	ever collect a user's Apple identifier that was	
9	specific to iOS when the user logged in to	
10	Facebook?	07:17:38
11	A. Logged in to Facebook when? On a mobile	
12	or on again, I again, I'm not trying to be	
13	difficult here. I want to make sure I'm giving you	
14	the best possible answers I can.	
15	These these terms and topics are very	07:17:54
16	complicated, and I want to make sure I'm giving you	
17	the right answer.	
18	Q. If a user logged in to Facebook using an	
19	Apple mobile device, did Facebook at any point	
20	in Facebook's history relevant to this case, 2007	07:18:05
21	to present, did Facebook collect a device	
22	identifier?	
23	A. Again, maybe I'm back to we got to	
24	a specific type of device identifier there, but	
25	we're going back to general device identifiers,	07:18:27
		Page 900

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1	which is a term I'm not sure I fully understand.	07:18:31
2	I see Special Master Garrie	
3	Q. Are you	
4	A is on the on the call.	
5	THE DEPONENT: Is there guidance you'd	07:18:37
6	like to give, Mr. Garrie?	
7	SPECIAL MASTER GARRIE: Not yet.	
8	Q. (By Mr. Melamed) Did when Facebook	
9	when a user logged in to Facebook using an Apple	
10	mobile device, did Facebook ever collect the IDFA,	07:18:48
11	which is the Apple device identifier?	
12	A. My understanding is that while I'm not an	
13	expert, again, at Facebook's login systems and how	
14	that works, my understanding is that yes, if you	
15	logged in to Facebook a Facebook app on iOS,	07:19:11
16	then the Facebook app then Apple would provide	
17	the IDFA to Facebook.	
18	Q. And if the user logged in to the Facebook	
19	via Android, would Facebook collect the user's GA	
20	ID?	07:19:37
21	A. I'm less familiar with with with	
22	how Android works. Assuming they're relatively	
23	similar, my understanding is that yes, Google would	
24	provide Facebook with an ID for that device.	
25	Q. How how did Facebook associate those	07:19:59
		Page 901

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1	IDs with users in their in Facebook's internal	07:20:05
2	systems?	
3	MR. SCHWING: Outside of the topic, the	
4	scope of the deposition. It's vague.	
5	THE DEPONENT: Yeah, I I'm not an	07:20:23
6	expert in in how these how these systems	
7	work. From from my experience, though, what I	
8	do know is that if you are logged in to Facebook on	
9	a device and that device has provided Facebook with	
10	such a device identifier, then that connection	07:20:44
11	would be associated with the user in Facebook's	
12	databases, although the precise nature and how that	
13	was stored is not something I'm I'm an expert	
14	on. I cannot give canonical testimony on.	
15	Q. (By Mr. Melamed) And so your you do	07:21:05
16	not want to provide testimony on well, let me	
17	state this in a positive way.	
18	Can you identify how Facebook tracked	
19	mobile device IDs that were associated with users?	
20	MR. SCHWING: Outside the scope of the	07:21:28
21	deposition.	
22	You can answer, if you can answer.	
23	THE DEPONENT: My understanding is that	
24	when a user logged in to a mobile device and that	
25	mobile device provided the Facebook app on that	07:21:41
		Page 902

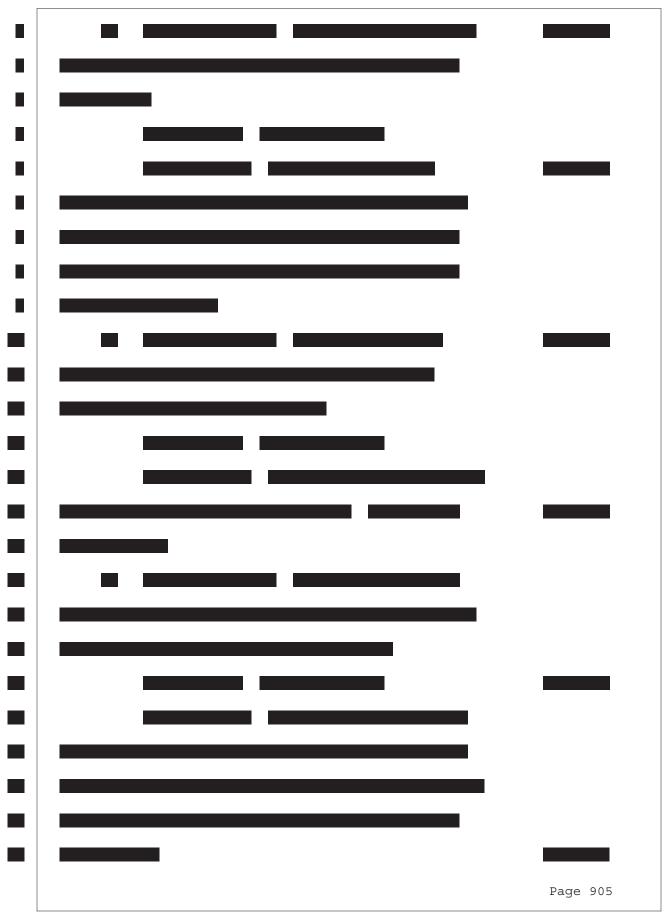
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device with an identifier, then that would be	07:21:44
logged in Facebook's data infrastructure as being	
associated with the user ID who logged in on that	
device.	
Q. (By Mr. Melamed) Do you know where that	07:22:02
information would be tracked? Is there a name of a	
document or a data system that tracks that	
association?	
MR. SCHWING: Same objections.	
THE DEPONENT: Again, precisely the	07:22:13
systems that that are used to to store that	
information. I think Hive the association would	
be would have been and would be stored in Hive.	
It would likely also have been stored in TAO and	
the Facebook you know, in TAO, in those	07:22:38
databases.	
Q. (By Mr. Melamed) Are you familiar with	
the term "reciprocity" as it relates to the	
relationship between Facebook and developers let	
me break this down.	07:23:02
Are you familiar with the term	
"reciprocity" as it is used inside Facebook?	
MR. SCHWING: Objection as vague.	
THE DEPONENT: I I've heard the term	
used inside Facebook and seen it used in in some	07:23:14
	Page 903
	logged in Facebook's data infrastructure as being associated with the user ID who logged in on that device. Q. (By Mr. Melamed) Do you know where that information would be tracked? Is there a name of a document or a data system that tracks that association? MR. SCHWING: Same objections. THE DEPONENT: Again, precisely the systems that that are used to to store that information. I think Hive the association would be would have been and would be stored in Hive. It would likely also have been stored in TAO and the Facebook you know, in TAO, in those databases. Q. (By Mr. Melamed) Are you familiar with the term "reciprocity" as it relates to the relationship between Facebook and developers let me break this down. Are you familiar with the term "reciprocity" as it is used inside Facebook? MR. SCHWING: Objection as vague. THE DEPONENT: I I've heard the term

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1	documents.	07:23:18
2	Q. (By Mr. Melamed) What is your	
3	understanding of what the term means?	
4	MR. SCHWING: Objection.	
5	Q. (By Mr. Melamed) Inside Facebook?	07:23:23
6	MR. SCHWING: Objection. Vague. Outside	
7	the scope.	
8	Go ahead.	
9	THE DEPONENT: Yeah, I can't speak to how	
10	that term is used inside Facebook in its entirety.	07:23:35
11	There's likely a number of ways in which that term	
12	has or has not been used by different teams at	
13	different times. The thing I the context I'm	
14	aware of it being used in is to do with the	
15	Facebook developer platform.	07:23:56
16	Q. (By Mr. Melamed) And can you explain the	
17	context the definition of that term and the	
18	context in which you are familiar with it being	
19	used?	
20	MR. SCHWING: Object to form.	07:24:09
21	THE DEPONENT: I'm aware of the term	
22	being used to refer to information being made	
23	available to developers and users having the option	
24	to share similar data back to Facebook as part of a	
25	Facebook integration.	07:24:40
		Page 904

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1	Q. (By Mr. Melamed) What about information	07:26:39
2	that users provided a third-party app directly?	
3	Did third-party apps ever provide that information	
4	back to Facebook?	
5	MR. SCHWING: Objection. Vague.	07:26:54
6	THE DEPONENT: Sorry. Can you ask the	
7	question again.	
8	Q. (By Mr. Melamed) I'm not trying to be	
9	difficult here. I'm trying to establish	
10	foundationally whether Facebook was receiving	07:27:22
11	information so Facebook provided information to	
12	app users through Facebook could provide	
13	information to apps, correct?	
14	A. Through the Facebook platform, users	
15	could provide information to apps, yes.	07:27:37
16	Q. And as within the definition of	
17	"reciprocity," as you explained it, there was this	
18	idea that there could be an exchange, which meant	
19	that users should also be able to enable apps to	
20	provide information back to Facebook, their	07:27:52
21	information back to Facebook, correct?	
22	MR. SCHWING: Misstates testimony.	
23	Object to form.	
24	THE DEPONENT: So going back to that	
25	definition of "reciprocity" as as I understand	07:28:05
		Page 906

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1	it, it's a very-high level idea that if an app is	07:28:08
2	accessing information on behalf of a user, that	
3	that app would also offer the user the opportunity	
4	to share similar information back to Facebook.	
5	Q. (By Mr. Melamed) Did that process ever	07:28:33
6	occur? Did apps ever provide did users	
7	did were users ever able to enable an app to	
8	provide information back to Facebook?	
9	A. Yes. One of the common features of the	
10	Facebook platform was that it allowed users to	07:28:55
11	choose to share activity in the app back to	
12	Facebook.	
13	Q. How did Facebook track the information	
14	that it received from users through third-party	
15	apps?	07:29:14
16	A. If the user chose to share their activity	
17	in an app back to Facebook, then, for example, to	
18	post a story or to share a story with their	
19	friends, then then yes, that that information	
20	would be stored against the user's Facebook profile	07:29:36
21	and made available on their timeline to their	
22	friends.	
23	Q. Where would that in which internal	
24	Facebook systems would that information be stored?	
25	A. If the user chose to share a story back	07:29:56
		Page 907

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1	to Facebook from a third-party app, then that would	07:29:58
2	be stored in TAO and made available on the user's	
3	timeline and then potentially rendered in their	
4	friends' newsfeeds.	
5	Q. The information that users could share to	07:30:18
6	Facebook through third-party apps was not limited	
7	to stories, correct?	
8	A. The the information that users could	
9	share or choose to share back to Facebook included	
10	stories, posts for their timeline, and also at a	07:30:38
11	time included what was known as Open Graph actions.	
12	Q. Can you provide a description of what	
13	Open Graph actions are?	
14	A. Open Graph refers to a a a product	
15	that Facebook had between 2011 and sometime later	07:31:02
16	where developers could share structured activity	
17	about a user's activity in their app back to	
18	Facebook so it could be shared with their their	
19	friend shared with their friends on their	
20	Facebook timeline.	07:31:30
21	Q. Was all of the information that was	
22	shared back to Facebook through Open Graph actions	
23	shared with the user's friends via the user's	
24	timeline?	
25	MR. SCHWING: Object to form.	07:31:45
		Page 908

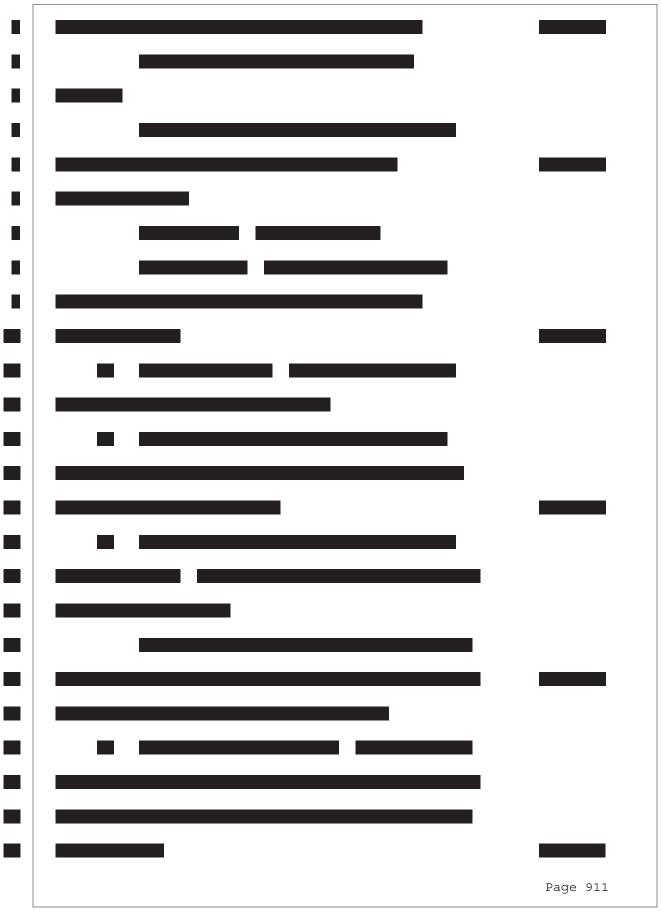
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THE DEPONENT: The information shared	07:31:51
back to Facebook, the user could choose who had	
which of their friends had the permissions to to	
see that information.	
Q. (By Mr. Melamed) Was there any	07:32:20
information from a third-party app shared back to	
Facebook that was associated with the user that	
Facebook did not make available to share via the	
user's timeline?	
MR. SCHWING: Object to form.	07:32:42
THE DEPONENT: Sorry. Can can you ask	
that again.	
Q. (By Mr. Melamed) Was there any	
information from a third-party app that was shared	
back to Facebook associated with an individual user	07:32:53
that Facebook did not make available via the user's	
timeline did not make available to be shared via	
the user's timeline?	
MR. SCHWING: Same objections.	
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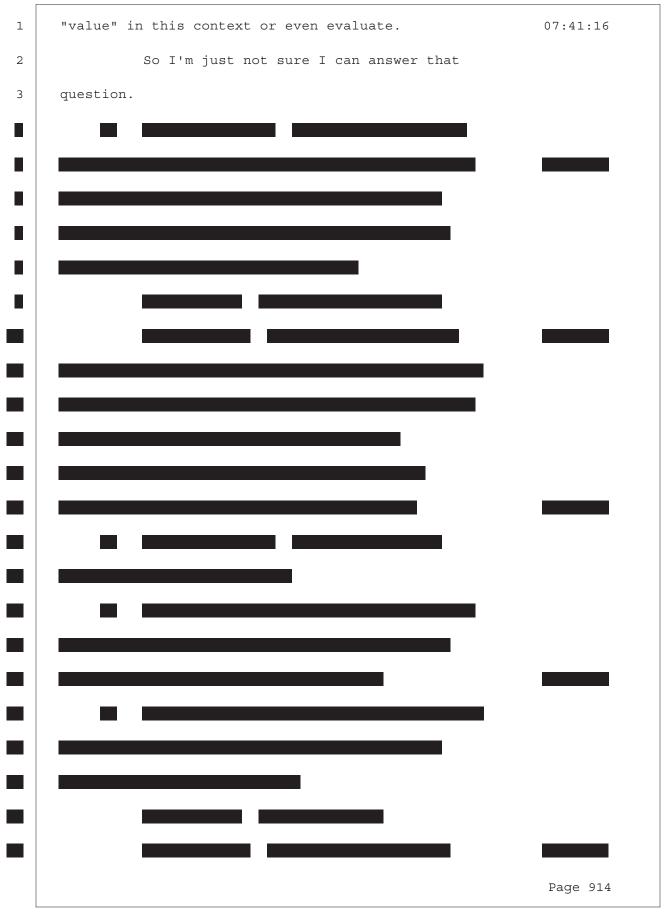
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1	Q. Other than from advertisers and data	07:37:26
2	brokers, did Facebook ever receive payment from any	
3	third party for user information?	
4	A. No. Facebook does not sell user data.	
5	Q. Let me let me just make sure I	07:37:43
6	understand your answer. I just asked whether it	
7	received payment. So is the answer the same?	
8	A. Facebook does not sell user data, and	
9	therefore I'm not aware of a time Facebook has	
10	received payment for user data.	07:38:05
11	Q. Has Facebook ever received any payment	
12	for aggregated user data other than the context	
13	that you're now testifying today as the targeted	
14	advertising and data brokers?	
15	A. I'm I'm not aware of any time Facebook	07:38:35
16	has received payment for aggregated user data.	
17	Q. Did Facebook ever evaluate the value to	
18	Facebook of aggregated user data?	
19	MR. SCHWING: Object to form.	
20	THE DEPONENT: Sorry. The value to	07:39:08
21	Facebook of aggregated user data? I'm sorry. I'm	
22	not sure I understand the question.	
23	Q. (By Mr. Melamed) Let me restate it more	
24	simply.	
25	Did Facebook ever evaluate the value to	07:39:16
		Page 912

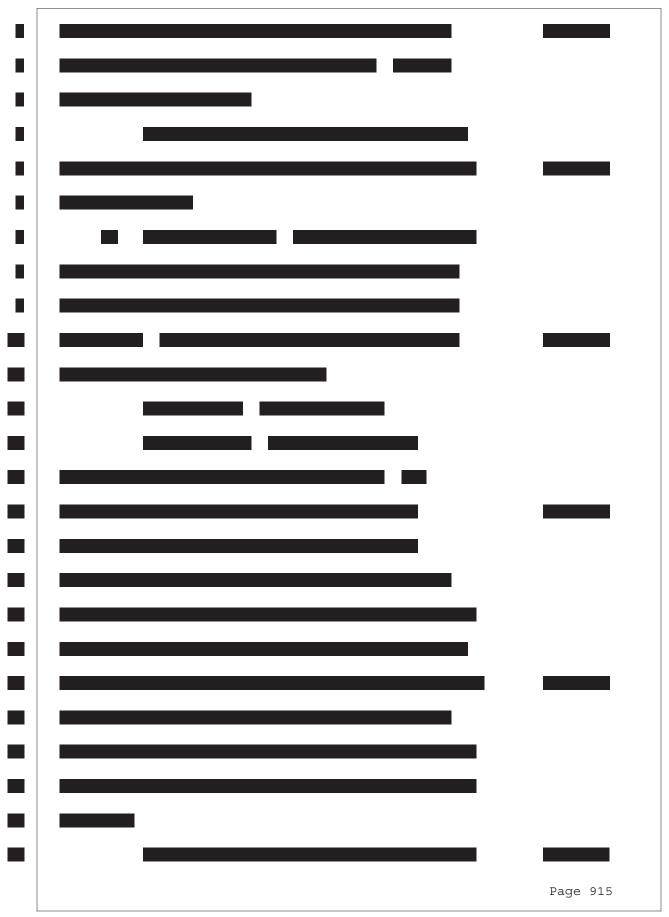
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1	Facebook of user data?	07:39:19
2	MR. SCHWING: Object to form. Outside	
3	the scope of the deposition.	
4	THE DEPONENT: I'm not sure how to answer	
5	that. I'm just sure not how to answer that	07:39:39
6	question.	
7	Like yeah. It's a it's a very	
8	I'm not sure how to answer that question.	
9	Q. (By Mr. Melamed) Did Facebook ever	
10	attempt to evaluate the value to Facebook of any	07:40:00
11	particular type of user data?	
12	MR. SCHWING: Object to form.	
13	THE DEPONENT: Again, could you give me	
14	an example of what you mean by "type of user data"?	
15	Q. (By Mr. Melamed) Did Facebook ever	07:40:21
16	attempt to evaluate the value to Facebook of data	
17	about where a user was educated, the user,	
18	you know an individual data point, an individual	
19	piece of information?	
20	MR. SCHWING: Object to form.	07:40:50
21	THE DEPONENT: Again, I'm not sure how to	
22	answer that that question. It's it's	
23	possible that an analysis was done across the	
24	15-year time period. I like it's hard to	
25	hard to hard to understand what's meant by by	07:41:12
		Page 913

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5	Q. (By Mr. Melamed) What let me withdraw	07:44:50
6	that.	
7	For those examples, were there particular	
8	document types that provided this tracking	
9	information, names of reports, internal systems,	
10	et cetera?	07:45:05
11	MR. SCHWING: The question is vague.	
12	THE DEPONENT: Again typically	
13	typically, this kind of this information would	
14	be tracked in in Hive, Facebook's data	
15	warehouse, and may have been propagated into other	07:45:19
16	systems as well. But typically, if I wanted if	
17	somebody wanted to understand how many users were	
18	using an application or the stories being shared	
19	from it, typically you would you would query	
20	that information in Hive.	07:45:36
21	Q. (By Mr. Melamed) We've talked about the	
22	method table correct? during during your	
23	testimony today?	
24	A. Yes, we've talked about the method table.	
25	Q. Can you tell me what types of information	07:46:11
		Page 916

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1	are reflected in the method table?	07:46:14
2	A. So going going from memory here.	
3	These are some of the things I recall in that	
4	table.	
5	The first is the app ID, which refers to	07:46:30
6	the specific Facebook application that would have	
7	made the API call.	
8	Another thing that was tracked was the	
9	API method, which refers to when an API call is	
10	made to a particular URL, that maps to to a	07:46:52
11	method, which is the atomic unit of of an API	
12	response on the Facebook side.	
13	The next thing that were tracked is the	
14	number of unique users whose access token was being	
15	used to request that information on that given day	07:47:15
16	and then a count of the number of requests that the	
17	given app made to the given method on the given	
18	day.	
19	And then my understanding is that another	
20	column is the count of errors, which will be	07:47:38
21	proportion of the calls that were made.	
22	So from my understanding, that's	
23	that's some of the information at least tracked in	
24	that table.	
25	Q. You just you just described the method	07:47:53
		Page 917

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1	as "the atomic unit" of an API response on the	07:47:55
2	Facebook side. Can you elaborate on the	
3	relationship between an API call and a method?	
4	A. A method is refers to a code a	
5	piece of code or a set of code on in Facebook's	07:48:17
6	infrastructure that is written to respond to a	
7	given API request.	
8	When an app makes a call to the API,	
9	it it supplies information it would like in that	
10	request, and those requests are mapped to a method.	07:48:45
11	Q. Is there a one-to-one mapping between the	
12	API and the method that is used to call the	
13	information requested by that API?	
14	A. So that that depends on your on the	
15	specific definition of API which is being used	07:49:09
16	in in context.	
17	So I wouldn't say it's a necessarily a	
18	one-to-one mapping, so yeah, I wouldn't say it's	
19	necessarily a one-to-one mapping.	
20	Q. Can you explain why there isn't	07:49:23
21	necessarily a one-to-one mapping?	
22	A. So, for example, we talk about the Graph	
23	API as a as a as a thing. But the Graph API	
24	is a is a collection of methods, and so	
25	sometimes people are referring to it an API and	07:49:41
		Page 918

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1	they mean the Graph API or another company's API	07:49:44
2	or or, you know, something like that, or they	
3	may be referring to an endpoint an API endpoint,	
4	or they may be referring to an API synonymous with	
5	a method.	07:50:02
6	So the terminology used there is is	
7	ambiguous, and the changes depending on the	
8	context.	
9	Q. I'm sorry.	
10	Does Facebook maintain an index that maps	07:50:11
11	methods to specific API requests?	
12	A. There is code there is code that maps	
13	an incoming API request to the method which exists	
14	to serve that request.	
15	Q. Is that information publicly available?	07:50:35
16	A. That's that refers to Facebook's	
17	internal systems of how how the API is	
18	documented publicly and then how Facebook's	
19	internal systems map an incoming API request to a	
20	method, which is a concept inside Facebook's code	07:51:05
21	base.	
22	Q. I'm asking because if the method table	
23	provides the method, I'm curious how we can use	
24	that method that's identified to map to an	
25	individual API request.	07:51:23
		Page 919

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1	Does that make does my so I'm	07:51:26
2	asking whether Facebook maintains something that	
3	would enable us to do that.	
4	A. Facebook maintains ways to resolve a	
5	method from a specific API call. I'm not aware of	07:51:40
6	a programmatic method that would map a method to,	
7	say, part of the Facebook developer documentation,	
8	although those mappings can be can be drawn	
9	manually.	
10	(Exhibit 426 was marked for	07:51:59
11	identification by the court reporter and is	
12	attached hereto.)	
13	MR. MELAMED: I've introduced what's been	
14	marked as Exhibit 426. Exhibit 426 is an excerpt	
15	from a CSV file produced in this case, Bates number	07:52:26
16	FB-MDL-MTHD-00080.csv.	
17	Mr. Cross and Counsel, for the record,	
18	these files are each individually so large that we	
19	could not share them, so this is an excerpt of ten	
20	rows of one of the what have been identified by	07:52:52
21	counsel as the method table files. I just want to	
22	use this as an example to talk through. I'm not	
23	asking questions about these individual entries	
24	other than to understand what they the	
25	information that they represent.	07:53:08
		Page 920

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1	Q. (By Mr. Melamed) Mr. Cross, are you	07:53:08
2	familiar with the type of information that's	
3	reflected in this document, Exhibit 426?	
4	A. Yes, I am.	
5	Q. And you reviewed it in preparation for	07:53:24
6	today?	
7	A. I I I think I reviewed this sample	
8	in preparation for today, and I I've worked with	
9	API methods previously.	
10	Q. And so can you see my screen, that I'm	07:53:36
11	sharing Exhibit 426?	
12	A. I can, but I also have the information	
13	available, so I don't think you need to, unless	
14	it's useful for you, Mr. Melamed.	
15	MR. MELAMED: Thank you. I'll share for	07:53:50
16	now. I've enlarged the only change I've made to	
17	what I think you downloaded and is enlarged in	
18	column size just so we can see a little bit more of	
19	what's in the column.	
20	Q. (By Mr. Melamed) When you used the	07:53:59
21	method table internally, is this the format that is	
22	returned to you?	
23	A. Yes, this matches how information is	
24	represented in the method table.	
25	Q. So if you look at column A in that, the	07:54:19
		Page 921
- 1		

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_	hardan of religion D de DC	07.54.00
1	header of column D is DS.	07:54:22
2	Do you see that?	
3	A. I do.	
4	Q. And what does DS stand for in this	
5	context?	07:54:28
6	A. DS is the standard way in which Hive	
7	tables are partitioned. It would refer to a	
8	particular date.	
9	Q. So all of the entries on this excerpt	
10	reflect entries from December 19th, 2019; is that	07:54:46
11	accurate?	
12	A. My understanding is that these were	
13	would reflect API calls made by a given application	
14	in a given 24-hour time window indicated by the	
15	date, yes.	07:55:04
16	Q. And column B is app ID.	
17	Do you see that?	
18	A. I do.	
19	Q. And that is a is the app ID a wholly	
20	numeric identifier?	07:55:17
21	A. Yes. App IDs follow Facebook's standard	
22	ID infrastructure and are numeric in nature.	
23	Q. And what is Facebook's standard ID	
24	infrastructure?	
25	A. So what I mean by that is when an object	07:55:43
		Page 922

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1	is created in Facebook's TAO TAO-fronted	07:55:46
2	databases, that entity will be given an ID, and	
3	those IDs are used for today are used for any	
4	entity in the Facebook social graph database.	
5	Q. Is there	07:56:13
6	A. Let let me back up. I want to make	
7	sure the record is clear on this.	
8	There are today, if an entry is	
9	created in in Facebook's databases, it will be	
10	given an ID, but there are entities in Facebook's	07:56:27
11	databases which were created before this ID scheme	
12	was was created, and in those cases, those	
13	entities may have a different form of ID.	
14	Q. When was this ID scheme created?	
15	A. I don't I'm not sure on the precise	07:56:48
16	date. This is a question about Facebook's general	
17	data infrastructure, but my understanding is it's	
18	worked this way or a variant of this way during	
19	my my entire tenure at Facebook.	
20	Q. And are you familiar with what the	07:57:06
21	structure of an API ID was before the time period	
22	when the	
23	This is a super simple question. Let me	
24	restate this.	
25	Do you know what they looked like before?	07:57:26
		Page 923

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1	A. My understanding is that app IDs and all	07:57:27
2	Facebook user IDs all Facebook object IDs have	
3	always been numeric.	
4	Q. They just have a different was it a	
5	different number of numerals in the ID?	07:57:40
6	A. Yes. Facebook's user ID space has has	
7	increased over time, and earlier on it was a	
8	smaller number of digits, and now it's more.	
9	Q. Do any of the digits in an app ID	
10	indicate anything about the app? For instance, do	07:57:59
11	certain are certain types of app IDs reflective	
12	of the fact that they are internal Facebook apps?	
13	A. No. The the format of a Facebook user	
14	ID does not determine whether or not it's internal	
15	or external third party. However, you could	07:58:22
16	theoretically determine broadly if an app idea is	
17	old or new based on the number of digits in the ID,	
18	for example.	
19	Q. Does Facebook maintain an index of app	
20	IDs to app names?	07:58:44
21	A. Yes. An app ID in Facebook's TAO	
22	database will have a number of fields associated	
23	with it, including the app name.	
24	Q. Does it also have the app developer	
25	associated with it?	07:59:06
		Page 924

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1	A. Can you help me understand what what	07:59:11
2	you mean by "the app developer."	
3	Q. Sure.	
4	If an app ID is associated with an	
5	individual Facebook app; is that correct?	07:59:17
6	A. An app ID uniquely refers to a specific	
7	Facebook app, yes.	
8	Q. What other information is associated with	
9	that app ID in in Facebook's internal records?	
10	A. So the kinds of information that would	07:59:38
11	typically be associated with an app ID would	
12	include the user IDs of the people who have a role	
13	on the application and other metadata, such as when	
14	the app ID was created, information about the app's	
15	privacy policy in terms of service URLs, and then a	08:00:05
16	number of other metadata fields. I could I	
17	could go on for more, but there's a number of	
18	things that would be associated with with an app	
19	ID.	
20	Q. Would it also identify whether an app was	08:00:21
21	still alive on the platform?	
22	A. The answer to that question depends on	
23	the definition of "still alive." So I can	
24	you help me understand what you mean by "still	
25	alive," and then maybe I'll be able to give you a	08:00:38
		Page 925

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1	more accurate answer.	08:00:41
2	Q. Would the information associated with an	
3	app ID in Facebook's internal records indicate when	
4	an app became available to users on the platform?	
5	A. So, again, the answer to that question	08:00:57
6	somewhat depends on what you mean by "became	
7	available to users on the platform."	
8	Again, I'm trying in terms of being	
9	helpful, try and give you my understanding of that.	
10	One of the properties of an app ID is its	08:01:11
11	mode, which at times are called development mode or	
12	sandbox mode and then public mode. And one of the	
13	things that is associated with an app ID is which	
14	mode it is in. If an app is in development mode,	
15	then only people users who have been given a	08:01:32
16	specific role on the application can interact with	
17	the app.	
18	So one way of determining whether or not	
19	an app is made available to users is whether or not	
20	it's in that sandbox mode. There's other ways,	08:01:48
21	too, but hopefully that provides some general	
22	information.	
23	Q. Is there information associated with an	
24	app ID that indicates whether an app has been	
25	suspended from being used on the platform?	08:02:02
		Page 926

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1	A. If an app ID has been suspended or	08:02:12
2	actually, let me back up.	
3	Can you help me understand what you mean	
4	by "suspended."	
5	Q. Sure. I mean it colloquially, but you	08:02:21
6	can is there information associated with an app	
7	ID that indicates that an app has been kicked off	
8	platform or whether an app has been told it has to	
9	do make certain adjustments before it can be out	
10	of sandbox mode again or any other disciplinary or	08:02:34
11	enforcement actions?	
12	MR. SCHWING: Object to form.	
13	THE DEPONENT: My understanding is that	
14	there will be some information about whether or not	
15	an app has had been enforced upon in some way.	08:02:53
16	Exactly which systems that that information is	
17	stored in depends on the the type of enforcement	
18	and when it was applied.	
19	Q. (By Mr. Melamed) I guess I'm asking	
20	whether there's a single table that exists like	08:03:10
21	what is the general information in the single	
22	table, if there is one, that is associated with an	
23	app ID?	
24	And I think you started to list some of	
25	those types of information. I'm just trying to	08:03:23
		Page 927

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1	understand if there are additional types of	08:03:24
2	information.	
3	A. Yes. There is a there is table in	
4	Hive that and the that contains information	
5	about a given app ID. That table has I want to	08:03:36
6	say it has quite a few columns.	
7	I can continue to try to give you some of	
8	the the information I think is the more the	
9	more I understand that I understand to be in	
10	that table. Those would typically be properties of	08:03:53
11	the ID itself as opposed to a time series, along	
12	retrieval of information, which would be contained	
13	in other tables.	
14	Q. Would how do you refer to the I	
15	just want to use the right nomenclature.	08:04:18
16	How do you refer to this primary table of	
17	apps that are associated with a particular the	
18	app ID table that we're talking about? Is there a	
19	name for that table?	
20	A. So the table I'm I'm referring to I	08:04:33
21	know as "DIM_all_apps."	
22	Q. "DIM"?	
23	A. DIM_all, A-L-L, _apps, A-P-P-S.	
24	Q. That is a Hive table, correct?	
25	A. I understand that to be a Hive table.	08:04:53
		Page 928

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1	Q. Does and do when you call it	08:04:59
2	when you talk about this table well, do you ever	
3	talk about this table in emails or in conversations	
4	with colleagues?	
5	A. It it's possible that people have	08:05:14
6	referred to this table in in emails, but	
7	Q. I don't mean I'm I'm not asking for	
8	a question where asking for memory. I'm just	
9	asking if there's a just as the we talked	
10	about something called the method table, which is	08:05:28
11	actually a slighter longer name, is there a way	
12	that you or your colleagues refer to the	
13	DIM_all_apps table that is not that full name?	
14	A. Not that I can think of now. Not that I	
15	think of now. When you're referring to a specific	08:05:48
16	table, typically you use the name of the table.	
17	Q. Does the DIM_all_apps table identify the	
18	number of users who have Facebook users that	
19	logged in to the app?	
20	A. There are there are tables that I'm	08:06:08
21	aware of or that I recall exist that include	
22	information about the app and information about the	
23	usage of the app. So those those tables exist.	
24	I I can't be 100 percent confident	
25	whether or not that information is in the the	08:06:30
		Page 929

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1	DIM_all_apps table.	08:06:33
2	Q. Are you confident that it is in another	
3	table?	
4	A. I'm confident that there are tables that	
5	list app IDs and the usage of those applications in	08:06:45
6	various ways over time.	
7	Q. Do you know are any of those not in	
8	the DIM_all_apps table?	
9	A. The DIM_all_apps table, in my	
10	understanding, refers to a specific table with a	08:07:09
11	specific set of fields, and I I don't recall	
12	today precisely the full set of fields that that	
13	that table contains. So but I am aware of other	
14	tables existing which include information about an	
15	app and its usage.	08:07:32
16	Q. And do you recall the names of any of	
17	those other tables that contain information about	
18	an app and its usage?	
19	A. I don't recall the name of those those	
20	tables precisely, no, but but there are I	08:07:43
21	recall having interacted with such tables in the	
22	past.	
23	Q. Do you know if there exists something	
24	like a pivot table that collects information	
25	associated with a single app from different Hive	08:08:07
		Page 930

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1	tables?	08:08:10
2	MR. SCHWING: Object to form.	
3	THE DEPONENT: So Facebook's Hive	
4	infrastructure, data infrastructure, allows data	
5	scientists to run queries which join tables	08:08:25
6	together and and produce other tables, either on	
7	an ad hoc basis or in order to create downstream	
8	tables in Hive itself.	
9	Q. (By Mr. Melamed) Do you know whether	
10	data scientists have you ever queried Hive tables	08:08:45
11	so that the information about apps inclusive of app	
12	ID and name and the elements that are in the	
13	DIM_all_apps table are combined with information	
14	about the app apps usage?	
15	MR. SCHWING: Object to form.	08:09:09
16	THE DEPONENT: Yes, I'm aware of tables	
17	that exist that combine information from	
18	DIM_all_apps and other sources of information,	
19	including app usage.	
20	Q. (By Mr. Melamed) And what tables are you	08:09:27
21	aware of that combine that information?	
22	A. Again, I Facebook's Hive data	
23	warehouse has, you know, a large number of tables	
24	in it. I I don't recall the specific names of	
25	those tables here and now. So, you know, I'm	08:09:47
		Page 931

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1	afraid I'm aware of those tables existing and	08:09:53
2	have and having had existed in the past, but	
3	I I can't recall the specific names of those	
4	tables as we sit here today.	
5	Q. If we were to ask you to go back and	08:10:10
6	identify those tables, would you be able to do so?	
7	A. I'm I'm not a data scientist, and I'm	
8	today not working on the platform team directly. I	
9	likely wouldn't have access to to the Facebook	
10	Hive tables themselves. I would speak to a data	08:10:29
11	scientist on the platform team to understand what	
12	was what was available.	
13	Q. Which data scientist would you speak to?	
14	A. I would start with Mark Molaro.	
15	Q. How many apps are on Facebook's platform	08:10:57
16	currently, about?	
17	A. Can you I mean, I the answer to	
18	that question depends on a number of factors as to	
19	what it means to be an app on on Facebook's	
20	platform and whether or not it's active. Today I	08:11:19
21	don't have the precise number of apps that are	
22	available on Facebook's platform.	
23	Q. Is one of the pieces of information that	
24	is associated with an app in any Hive table whether	
25	the app is a first-party Facebook app or not?	08:11:39
		Page 932

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1	MR. SCHWING: Object to form.	08:11:50
2	THE DEPONENT: My understanding is that	
3	there is today a determination of whether or not an	
4	app ID is considered a first-party application. I	
5	assume that information is stored somewhere in	08:12:05
6	Hive, but I couldn't be sure.	
7	Q. (By Mr. Melamed) Do you know the time	
8	period for which the method the information in	
9	the method tables is available?	
10	A. The method table goes back to 2012, in my	08:12:28
11	understanding.	
12	Q. Going back to Exhibit 426, which is the	
13	excerpted ten rows. I'm sorry; it's only nine rows	
14	of the method table.	
15	Column C is the method.	08:12:44
16	Do you see that?	
17	A. I do see that.	
18	Q. And that, as you described it before, is	
19	the atomic element of the piece of code that is	
20	used to call a particular type of information; is	08:12:54
21	that right?	
22	A. A method refers to a a piece of code	
23	in Facebook's infrastructure that's used to create	
24	a response to an API request.	
25	Q. Okay. So I asked you before whether	08:13:10
		Page 933

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1	there was a mapping of API requests to a method	08:13:13
2	calls. Am I using the lingo correctly? I don't	
3	mean to be confusing.	
4	MR. SCHWING: Object to form.	
5	THE DEPONENT: So going back to what I	08:13:27
6	I think I referred to earlier is when an API call	
7	is made, there is a system which takes that API	
8	request and determines which method is run to	
9	create the API response. So that's that's	
10	how that's how the system works.	08:13:48
11	Q. (By Mr. Melamed) Is that system	
12	something that could be produced in this case? Is	
13	that a is it a tool that Facebook maintains, or	
14	is it a list, a table?	
15	MR. SCHWING: Outside the scope of the	08:14:00
16	deposition. Object to form.	
17	THE DEPONENT: So the way in which an API	
18	request is received and processed is is code,	
19	and it's my understanding it's code that runs to	
20	determine which method to execute in response to an	08:14:21
21	incoming API request.	
22	Q. (By Mr. Melamed) So there's no public	
23	way to identify the API requests that are	
24	associated with the methods that are in rows 2	
25	through 10 in column C of Exhibit 426; is that	08:14:40
		Page 934

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1	accurate?	08:14:44
2	MR. SCHWING: Object to form.	
3	THE DEPONENT: There is you can read	
4	some of these entries here and and understand	
5	what the API request would have been in order to	08:14:55
6	to to hit the method.	
7	Q. (By Mr. Melamed) Okay. That's helpful,	
8	but it's not an answer to my question, which is	
9	if if plaintiffs in this case wanted an index	
10	that provided API requests and cross-referenced	08:15:16
11	those API requests to the method so that we could	
12	make use of the method table, is that something	
13	that is that could is that even within the	
14	realm of possibility as something that could be	
15	produced?	08:15:35
16	MR. SCHWING: It's outside the scope of	
17	the deposition. Object to form.	
18	THE DEPONENT: I I'm not sure I'm an	
19	expert in what what can be produced or in what	
20	form that would be appropriate. If it would help	08:15:50
21	if, we could go through these and I could talk	
22	through my understanding of how they map to an API	
23	method, and if that would be useful, then that	
24	might be help you interpret this information.	
25	Q. (By Mr. Melamed) Thank you for the	08:16:07
		Page 935

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1	offer. Unfortunately, these are nine rows out of	08:16:07
2	many, many, many millions and were not selected as	
3	the rows that were the methods based on the	
4	methods. They were just a selection of the first	
5	nine rows of a particular document.	08:16:21
6	So we'll have to that's something I	
7	think we will have to discuss with counsel.	
8	Row I'm sorry. Column D has the	
9	header "CNT."	
10	Can you tell me what "CNT" stands for?	08:16:39
11	A. "CNT" stands for count.	
12	Q. And what does "count" mean in this	
13	context?	
14	A. "Count" in this context means the number	
15	of API requests made by that application to that	08:16:54
16	Graph API method within the given 24-hour time	
17	window described by the DS column.	
18	Q. So to take row 2 as an example, the first	
19	four columns indicate that on in the 24 hour	
20	time period of December 19th, 2019, an app an	08:17:18
21	application with the ID number in column B would	
22	made API requests corresponding to the method	
23	<pre>GR:Post:page/messenger_profile 12 times; is that</pre>	
24	accurate?	
25	A. A caveat here is that my understanding of	08:17:46
		Page 936

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1	the count column is that this what's known in	08:17:47
2	Presto as "approx count" or in Hive as "approx	
3	count," and so it's it's a count that is	
4	accurate to within a high degree of accuracy but	
5	but may not be 100 percent accurate. But it can be	08:18:06
6	assumed to be as accurate as needed.	
7	Q. Assumed to be accurate as needed by whom?	
8	A. In general, when my understanding is	
9	it's it's accurate to within 95 percent of the	
10	true value, at least, if not more.	08:18:27
11	Q. Do you know do you know what the	
12	reason that it is not accurate for 100 percent of	
13	the value?	
14	A. My understanding that that's due to	
15	computational intensity. The approx count function	08:18:50
16	in Presto, which is the query engine, is	
17	produces a result with that's highly accurate	
18	with significantly less computing power.	
19	Q. And then column E is users. Do you know	
20	what the information reflected in that column	08:19:13
21	means?	
22	A. My understanding is this refers to the	
23	number of distinct user access tokens or entity	
24	access tokens that were used to make the API	
25	requests.	08:19:32
		Page 937
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1	Q. So for row 2, those 12 requests had a	08:19:33
2	95 percent accuracy level by that one app for the	
3	particular method in the 24 hours of December 19th,	
4	2019, were made by a single on behalf of a	
5	single user; is that accurate?	08:19:51
6	A. That's my understanding of what what	
7	column B means, yes.	
8	Q. Okay. If you look at Column E, row 9.	
9	There are other rows that have this information,	
10	too, but just for for purposes of this	08:20:05
11	discussion, row 9 has users as zero. And that app	
12	in row 9 during the 24 hour time period on	
13	December 19th, 2019, requested a particular method	
14	GR:get:\search:place 480 times but did so on behalf	
15	of zero users.	08:20:35
16	Do you see that?	
17	A. I do see that.	
18	Q. Do you know how that how it was zero	
19	users how that many	
20	Let me rephrase the question.	08:20:42
21	Do you know how an API request could be	
22	made, let alone made 480 times, without the user	
23	having requested it?	
24	A. There are	
25	Sorry. Say that again, Austin.	08:21:05
		Page 938
		ı

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1	MR. SCHWING: Object to form.	08:21:07
2	You can go ahead and answer, Mr. Cross.	
3	THE DEPONENT: Apps have what's called an	
4	"app access token," which does not refer to a	
5	particular user's authenticated session, and my	08:21:16
6	understanding is that it's likely that those calls	
7	were made with an app access token, not a user	
8	access token. I can't 100 percent of that, because	
9	I'd need to fully understand the lineage of the	
10	data systems, but that's that's my understanding	08:21:36
11	of of how you would have API requests in here	
12	without them being ascribed to a number of users.	
13	Q. (By Mr. Melamed) And then column F	
14	and we can refer to return to row 2 for this is	
15	the the header of column F is "CNT_successful."	08:21:56
16	Do you know what that stands for?	
17	A. That that refers to count successful.	
18	Q. And what does count successful mean in	
19	this context?	
20	A. My understanding is that refers to	08:22:12
21	whether or not the API the Graph API	
22	infrastructure considered the request by the	
23	third-party app to be a successful request.	
24	Q. What makes a successful request?	
25	Let me rephrase that.	08:22:27
		Page 939

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1	What does it mean in context of this	08:22:32
2	spreadsheet to call a request successful?	
3	A. My understanding is it means that the app	
4	made a well-formed request and that the API	
5	returned a response or was able to return a	08:22:49
6	response a response to that request.	
7	Q. Is it possible to return a response that	
8	does not provide information in response to a	
9	request?	
10	Actually, let me do you understand	08:23:03
11	what I'm asking with that question? I'm sorry.	
12	This is	
13	MR. SCHWING: The question is vague.	
14	MR. MELAMED: Yeah. So	
15	MR. SCHWING: If you do know what he	08:23:13
16	means, go ahead. But I don't it seems to me	
17	there was uncertainty.	
18	MR. MELAMED: I know what I intend to	
19	mean. I'm not sure I communicated it to you,	
20	Simon or Mr. Cross. I'm sorry.	08:23:22
21	Q. (By Mr. Melamed) So if you're able to	
22	answer, just state what you think the question	
23	you think you're answering and I'll help to	
24	clarify.	
25	If you're not able to answer, I'm happy	08:23:31
		Page 940

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1	to clarify.	08:23:33
2	MR. SCHWING: Yeah, I'm going to restate	
3	the objection that it's vague.	
4	THE DEPONENT: What I think you mean is	
5	is it possible for the API to to return	08:23:52
6	successful to for the API request to be	
7	considered successful but return no information?	
8	Is that is what you're asking? If so	
9	Q. (By Mr. Melamed) Yes. Let's let's	
10	say let's put a different example on here.	08:24:07
11	Let's say there was an API call made for	
12	your friend's religious and political preferences,	
13	and that API call was well formed, and so it	
14	reflects in this method table in the counts and the	
15	users. And would that but you had not provided	08:24:27
16	access to that information to the app.	
17	Would that return has be indicated in	
18	the CNT successful as a successful query for that	
19	information?	
20	MR. SCHWING: Vague. Incomplete	08:24:46
21	hypothetical.	
22	THE DEPONENT: Yeah, again, the a full	
23	answer here like might require some some	
24	some digging in exactly how these data pipelines	
25	work.	08:25:07
		Page 941

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1	So but but my understanding is that	08:25:07
2	the API would return a successful response even if	
3	there was no information returned based on the	
4	permissions and your privacy settings. As far as	
5	the API concerned, it was a lawful request and it	08:25:28
6	was able to provide a response, but that response	
7	being empty because of permission checks not	
8	passing would be considered a successful request	
9	even in in the case of empty response.	
10	Q. (By Mr. Melamed) Thank you. That's	08:25:48
11	helpful.	
12	Is there any other information other than	
13	these columns reflected in the method table?	
14	A. My understanding is is this is	
15	representative of what is stored in in the	08:26:03
16	method table.	
17	MR. SCHWING: We've been going about an	
18	hour.	
19	MR. MELAMED: We can go off the record	
20	and take a break.	08:26:17
21	THE VIDEOGRAPHER: Okay. We're off the	
22	record. It's 8:26 p.m.	
23	(Recess taken.)	
24	THE VIDEOGRAPHER: We're back on the	
25	record. It's 8:50 p.m.	08:50:30
		Page 942

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8	(Exhibit 427 was marked for	
9	identification by the court reporter and is	
10	attached hereto.)	08:54:14
11	MR. MELAMED: So I've marked what's	
12	been or I've introduced what's been marked as	
13	Exhibit 427. You're going to see that the	
14	Exhibit Share is unable to preview the file, and	
15	I'm happy to share my screen to show it.	08:54:30
16	Q. (By Mr. Melamed) It is Facebook I'm	
17	sorry. The Bates number is FB-CA-MDL-02936298.tsv.	
18	I'll note that the version you're looking at on my	
19	screen says "(2)" because I had downloaded it	
20	earlier, and I'll state for the record that I	08:55:00
21	haven't made any changes to this other than to wrap	
22	text and expand the columns so that we can see	
23	them.	
24	I'll also state for the record that this,	
25	like the method tool spreadsheet we were looking at	08:55:17
		Page 945

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1	before, is an excerpt of a much larger document, so	08:55:19
2	this is only ten rows, so the column header and	
3	then nine entries. And I just want to do something	
4	similar to what we just did with the method tool.	
5	MR. SCHWING: And, Matt, just so I'm	08:55:33
6	clear I appreciate that description. So this	
7	is there was a larger spreadsheet, and this is	
8	just the first ten rows of that spreadsheet? You	
9	didn't change the ordering?	
10	THE DEPONENT: Correct. I that is my	08:55:46
11	understanding. I'm sorry if we did, but I did not	
12	intend to change any ordering. It's intended to	
13	just reflect	
14	MR. SCHWING: Okay.	
15	MR. MELAMED: these the column	08:55:57
16	header and then nine I think the first nine	
17	rows.	
18	Q. (By Mr. Melamed) Mr. Cross, have you	
19	seen are you familiar with the content reflected	
20	in this excerpt?	08:56:09
21	A. I it looks similar to something I've	
22	reviewed previously. I'm familiar I'm familiar	
23	with with the content, I think, yes.	
		Page 946

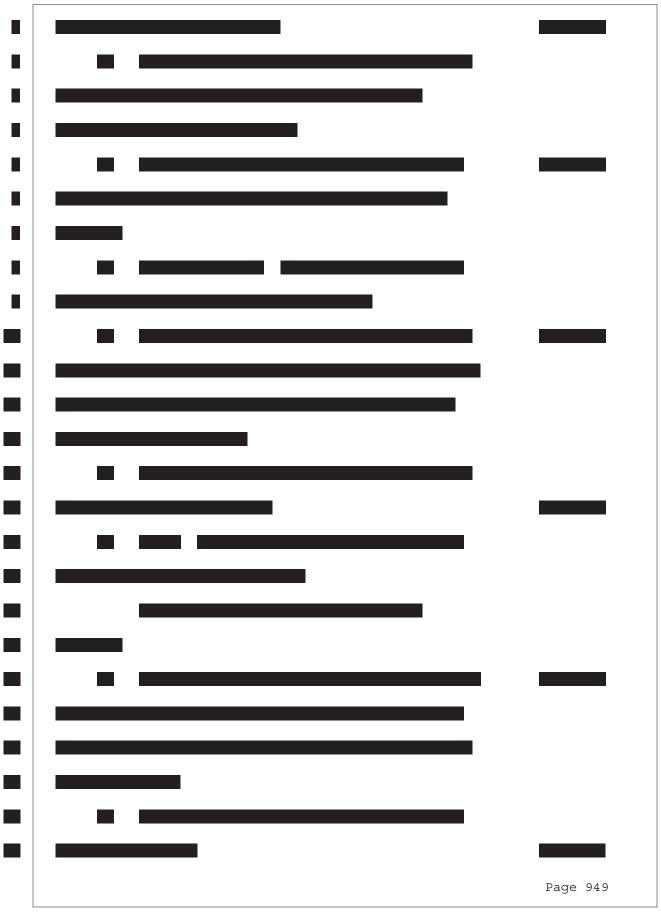
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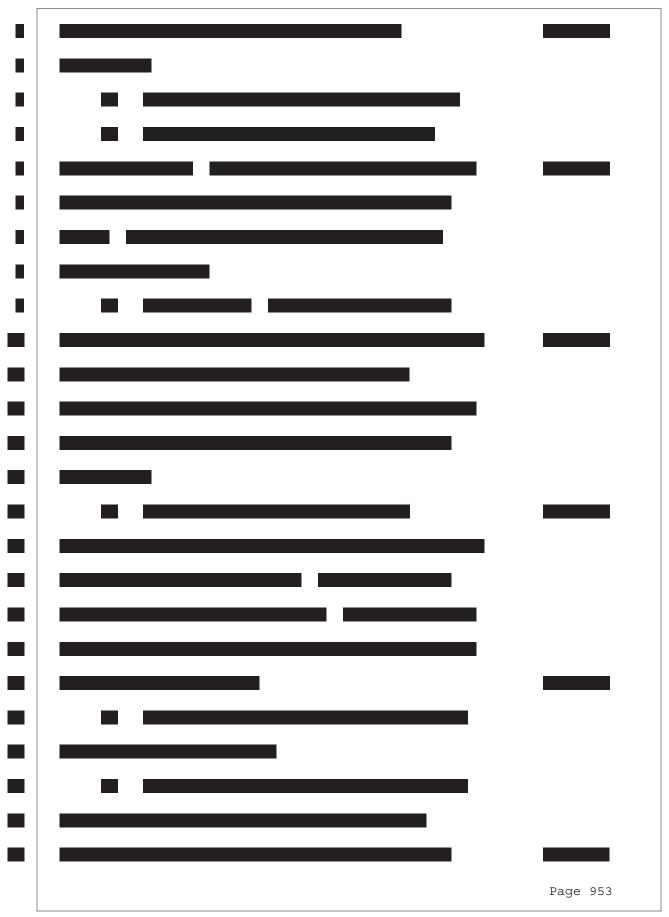
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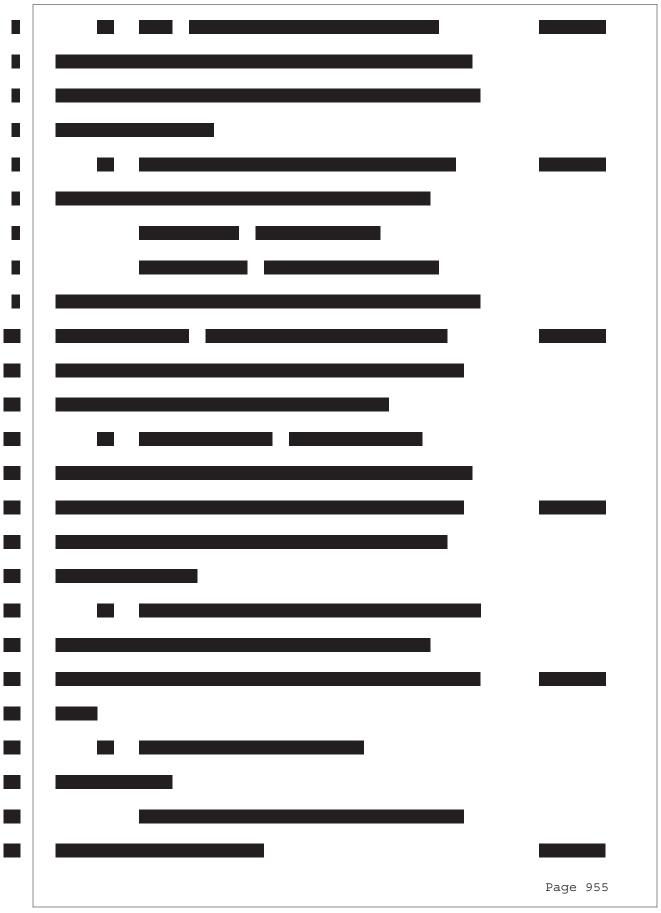
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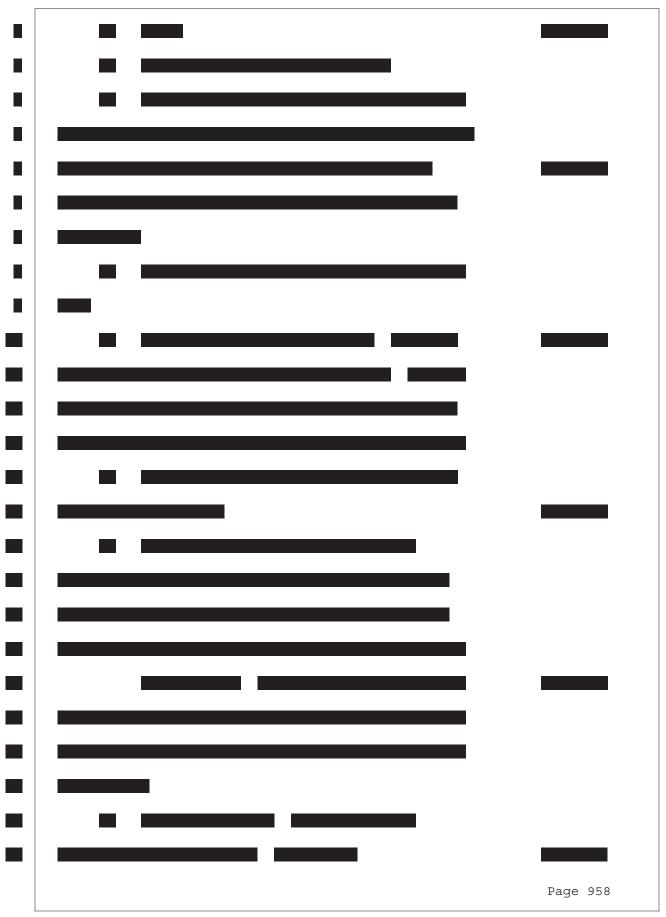
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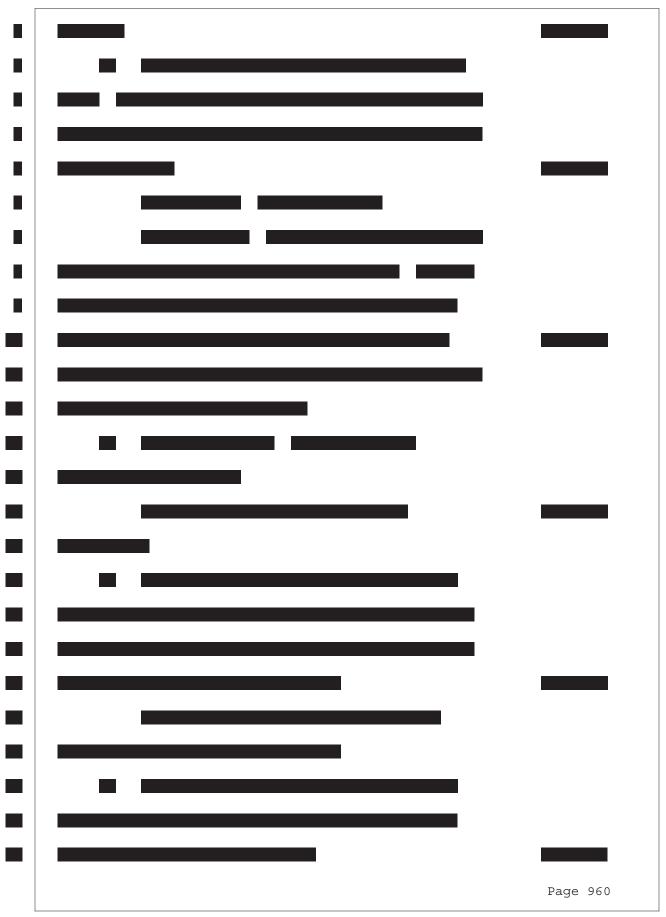
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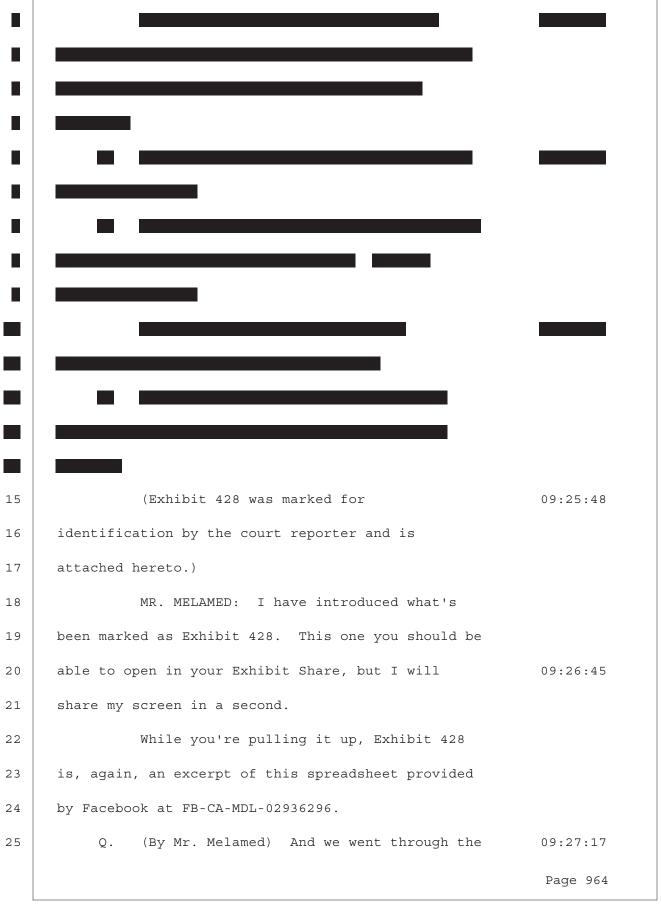


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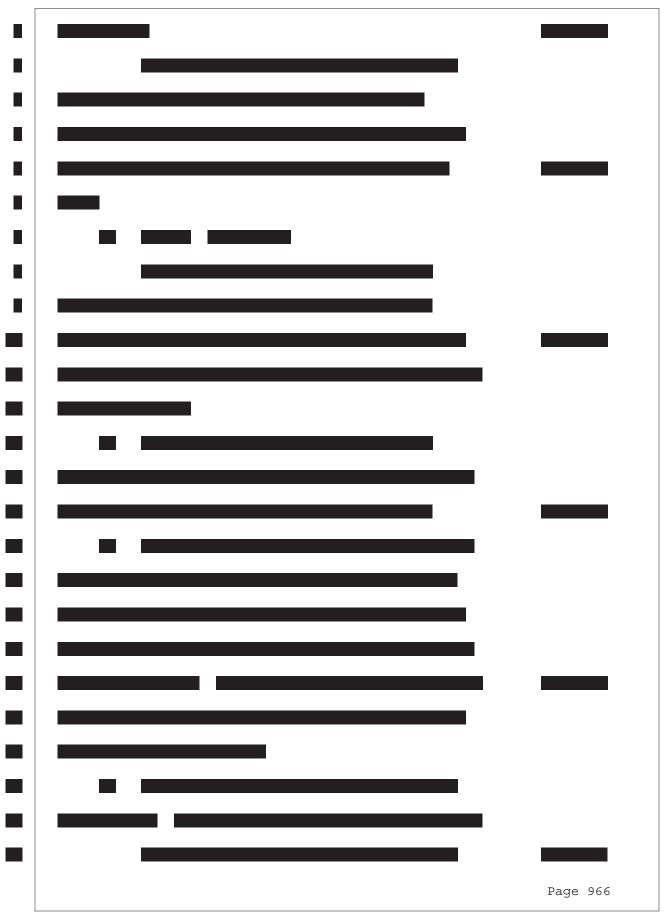




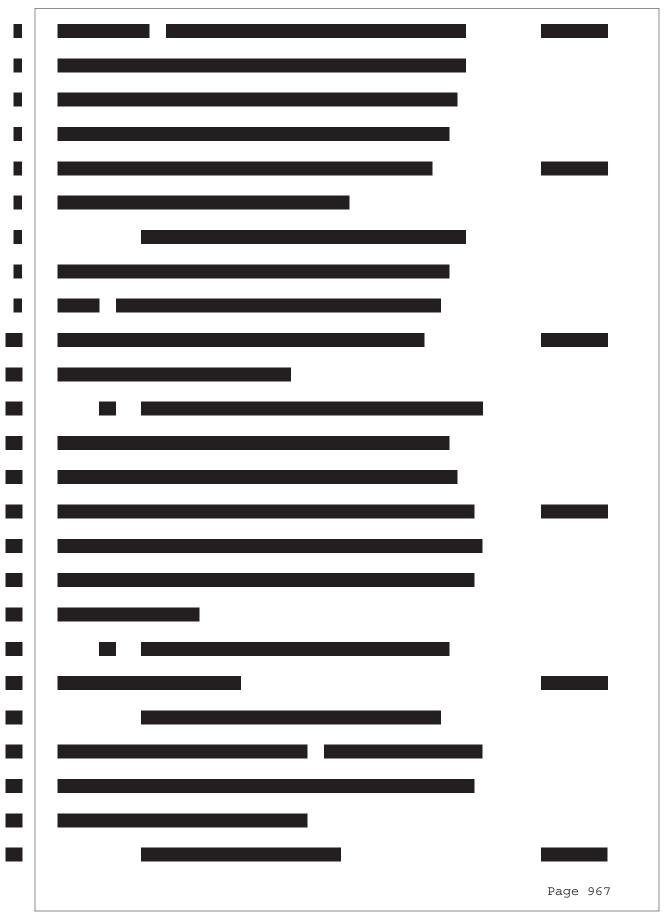
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1	same process here. It's not a you know, it's a	09:27:18
2	fairly random selection of the first several rows	
3	just so we can discuss the information that's	
4	provided on this spreadsheet.	
5	And for ease of legibility, I'm going to	09:27:29
6	stretch the columns out a little bit and share my	
7	screen.	
8	While I'm doing this, have are you	
9	familiar with this document, Mr. Cross?	
10	A. I am familiar with this document.	09:27:47
11	Q. And you reviewed this in preparation for	
12	testifying today?	
13	A. I did.	
14	Q. What does this document reflect? What is	
15	your understanding of the information that this	09:27:59
16	document reflects?	
		Page 965

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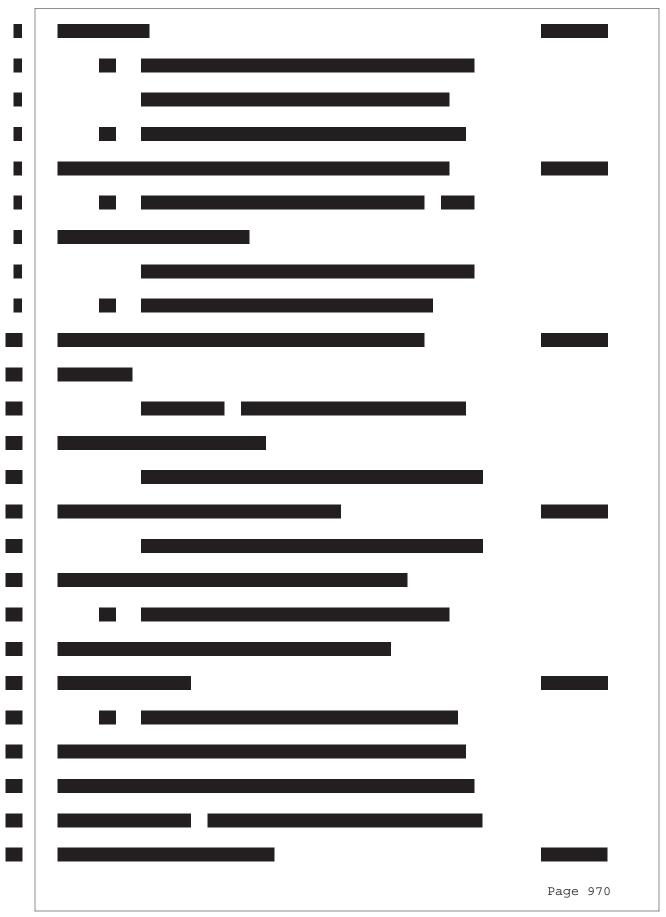
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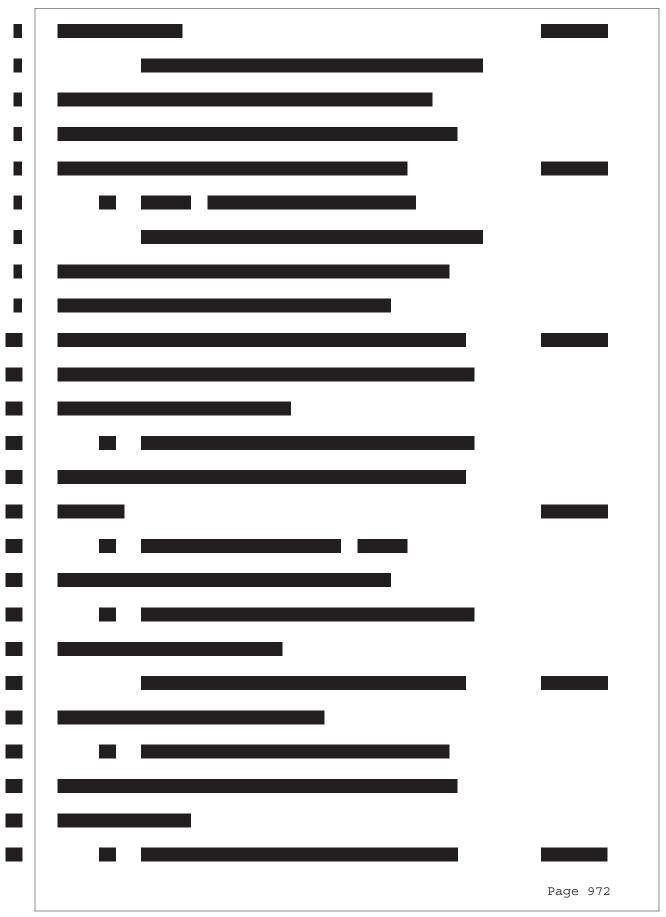
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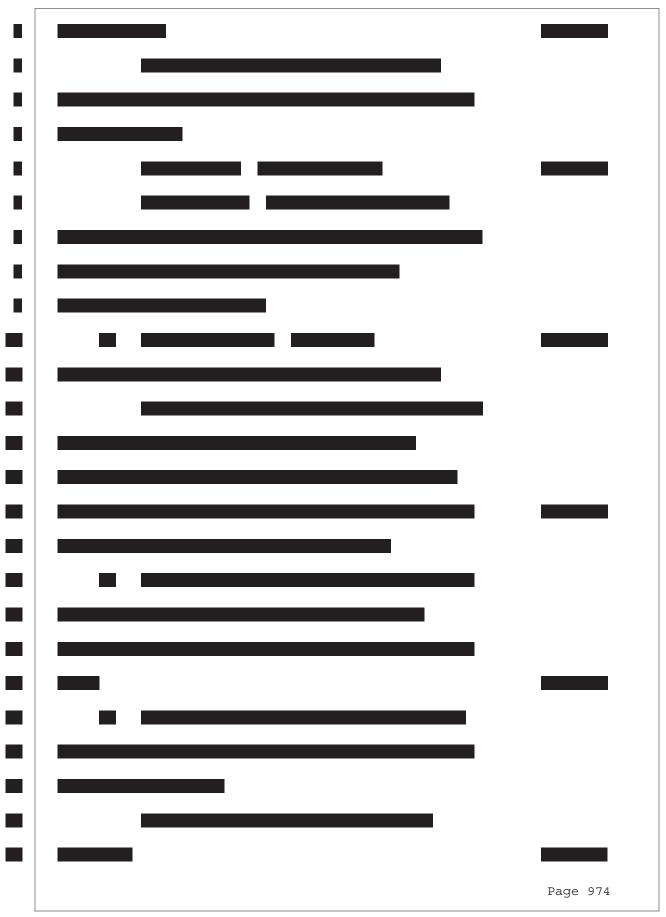
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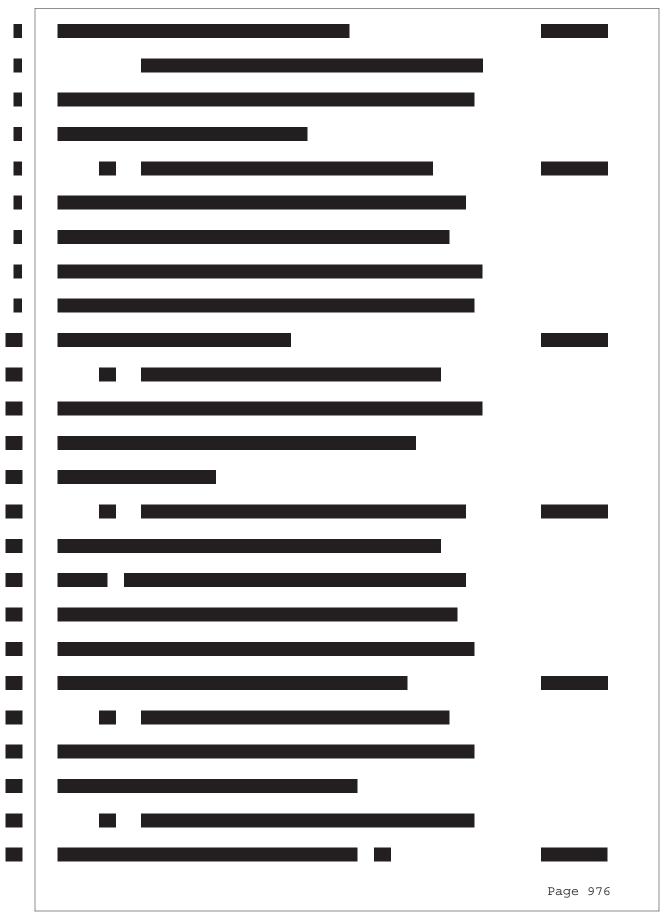
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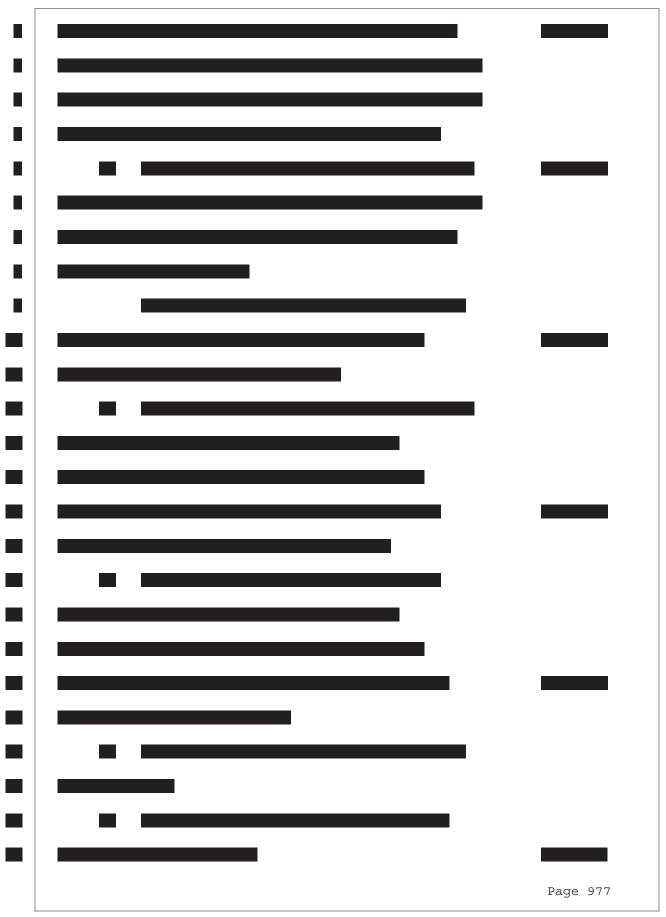
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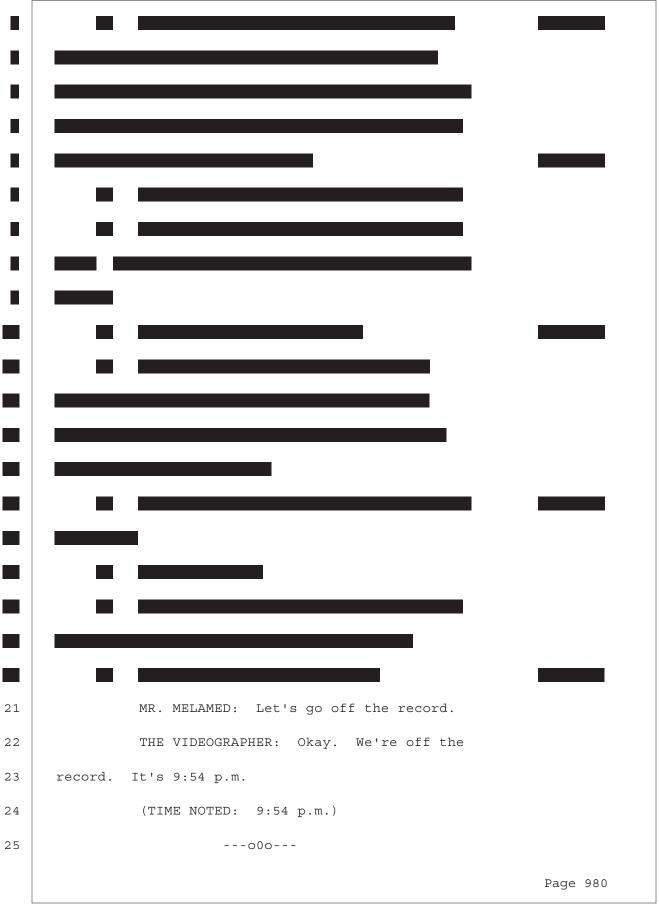
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1 I, Rebecca L. Romano, a Registered Professional Reporter, Certified Shorthand 2. 3 Reporter, Certified Court Reporter, do hereby certify: 4 That the foregoing proceedings were taken 5 before me remotely at the time and place herein set 6 7 forth; that any deponents in the foregoing 8 proceedings, prior to testifying, were administered an oath; that a record of the proceedings was made 9 by me using machine shorthand which was thereafter 10 11 transcribed under my direction; that the foregoing transcript is true record of the testimony given. 12 Further, that if the foregoing pertains to the 13 14 original transcript of a deposition in a Federal 15 Case, before completion of the proceedings, review of the transcript [X] was [] was not requested. 16 17 I further certify I am neither financially interested in the action nor a relative or employee 18 of any attorney or any party to this action. 19 IN WITNESS WHEREOF, I have this date 2.0 21 subscribed my name this 23rd day June, 2022. 22 23 Rebecca L. Romano, RPR, CCR 24 CSR No. 12546 25

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1	I, SIMON CROSS, do hereby declare under
2	penalty of perjury that I have read the foregoing
3	transcript; that I have made any corrections as
4	appear notes; that my testimony as contained
5	herein, as corrected, is true and correct.
6	Executed this <u>6th</u> day of <u>August</u> ,
7	2022, at
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11	Timolings
12	1 money
13	SIMON CROSS
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1	RE: FACEBOOK, INC., CONSUMER USER PROFILE LITIGATION
2	SIMON CROSS (JOB NO. 5281223)
3	ERRATA SHEET
4	PAGE 741 LINE 15 CHANGE "Facebook" to
5	"how Facebook"
6	REASON_misspoke
7	PAGE 742 LINE 9 CHANGE "No" to "Objection"
8	
9	REASON_transcription_error
10	PAGE 743 LINE 7 CHANGE "with" to "which"
11	
12	REASON_ transcription error
13	PAGE 760 LINE 18 CHANGE "compute" to "computing"
14	
15	REASON_transcription_error
16	PAGE 761 LINE 21 CHANGE "compute" to "computing"
17	
18	REASON_transcription error
19	PAGE 768 LINE 14 CHANGE "detail" to "detailed"
20	
21	REASON transcription error
22	
23	Timesling 6th Aug 2022
24	SIMON CROSS Date
25	
	Page 985
	1 age 703

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1	RE: FACEBOOK, INC., CONSUMER USER PROFILE LITIGATION
2	SIMON CROSS (JOB NO. 5281223)
3	ERRATA SHEET
4	PAGE_796 LINE_6 CHANGE
5	
6	REASONtranscription error
7	PAGE LINE_4 CHANGE"Ally" to "Ali"
8	
9	REASON transcription error
10	PAGE_810_LINE_2CHANGE"in" to "with"
11	
12	REASON_transcription error
13	PAGE 835 LINE 13 CHANGE
14	
15	REASON transcription error
16	PAGE_835_ LINE_21_ CHANGE
17	
18	REASON_ transcription error
19	PAGE_836_ LINE_14_ CHANGE
20	transgription error
21	REASONtranscription_error
22	TimesCine 6th Aug 2022
23	
24	SIMON CROSS Date
25	
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1	RE: FACEBOOK, INC., CONSUMER USER PROFILE LITIGATION
2	SIMON CROSS (JOB NO. 5281223)
3	ERRATA SHEET
4	PAGE_838 LINE_3 CHANGE delete "time"
5	
6	REASON_misspoke
7	PAGE_844_ LINE_7 CHANGE
8	
9	REASONtranscription error
10	PAGE 848 LINE 19 CHANGE "Ally" to "Ali"
11	
12	REASON
13	PAGE_861_LINE_16_CHANGE_
14	
15	REASON_transcription error
16	PAGE_871 LINE_24 CHANGE_ CHANGE_
17	
18	REASON_transcription error
19	PAGE 878 LINE 14 CHANGE
20	
21	REASON_ transcription error
22	
23	Timusling 6th Aug 2022
24	SIMON CROSS Date
25	
	D
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1	RE: FACEBOOK, INC., CONSUMER USER PROFILE LITIGATION
2	SIMON CROSS (JOB NO. 5281223)
3	ERRATA SHEET
4	PAGE 883 LINE 24 CHANGE "hear" to
5	"hear privileged information."
6	REASON_transcription error
7	PAGE 891 LINE 7 CHANGE
8	
9	REASONtranscription_error
10	PAGE 905 LINE 7 CHANGE
11	
12	REASONmisspoke
13	PAGE 924 LINE 13 CHANGE "user" to "app"
14	
15	REASONmisspoke
16	PAGE 924 LINE 16 CHANGE "idea" to "ID"
17	
18	REASON_transcription_error
19	PAGE 948 LINE 25 CHANGE
20	
21	REASON transcription error
22	
23	Timusling 6th Aug 2022
24	SIMON CROSS Date
25	
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	Page 985

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1	RE: FACEBOOK, INC., CONSUMER USER PROFILE LITIGATION
2	SIMON CROSS (JOB NO. 5281223)
3	ERRATASHEET
4	PAGE 949 LINE 3 CHANGE
5	
6	REASON_ transcription error
7	PAGE LINE CHANGE
8	
9	REASON
LO	PAGELINECHANGE
ll	
12	REASON
13	PAGELINECHANGE
14	
15	REASON
16	PAGELINECHANGE
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18	REASON
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	Page 985

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	10 0000	244.12	- 100 C : -
&	19 882:8	944:12	2100 729:17
& 725:14 726:19	19th 922:10	2013 797:14 821:3	213 731:10
728:5 729:5 730:5	936:20 938:3,13	821:10 826:8,13	214 729:19
733:18 735:10	1:35 726:18 733:2	838:20 910:13	23 982:2
982:23 983:9	733:6	944:12,13	23:51.0 957:9
0	2	2014 752:16	23rd 981:21
	2 735:11,16,25	794:12 826:8,13	24 922:14 936:16
00080 732:16	738:4 934:24	831:8 833:20,22	936:19 938:3,12
00080.csv. 920:16	936:18 938:1	833:24,25 834:19	25 751:17 754:5
018 732:22	939:14 945:19	834:21 835:5,11	253-9706 731:10
022 732:16	957:7 968:6	836:4,7 842:5,7,13	2843 725:4 726:4
02843 725:6 726:6	2.1 853:3	843:13 844:3	298-5735 730:11
029362498 732:19	2.1 853.3 2.3 853:4	845:10 846:10,19	2:53 785:21
02936296 732:22	2.3 855.4 20 725:16 726:18	847:1,2 910:13	2c 740:10
964:24 973:16	733:1 982:4	914:13,20	2cu 744:5
02936298.tsv.	20-0466 725:22	2015 794:21	2d 744:20 800:15
945:17	20-0400 723.22 200 881:17	957:18,22	800:16 847:5
1	200 881:17 2001 729:16	2016 794:21	848:16,20
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Federal Rules of Civil Procedure Rule 30

- (e) Review By the Witness; Changes.
- (1) Review; Statement of Changes. On request by the deponent or a party before the deposition is completed, the deponent must be allowed 30 days after being notified by the officer that the transcript or recording is available in which:
- (A) to review the transcript or recording; and
- (B) if there are changes in form or substance, to sign a statement listing the changes and the reasons for making them.
- (2) Changes Indicated in the Officer's Certificate. The officer must note in the certificate prescribed by Rule 30(f)(1) whether a review was requested and, if so, must attach any changes the deponent makes during the 30-day period.

DISCLAIMER: THE FOREGOING FEDERAL PROCEDURE RULES

ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

THE ABOVE RULES ARE CURRENT AS OF APRIL 1,

2019. PLEASE REFER TO THE APPLICABLE FEDERAL RULES

OF CIVIL PROCEDURE FOR UP-TO-DATE INFORMATION.

VERITEXT LEGAL SOLUTIONS COMPANY CERTIFICATE AND DISCLOSURE STATEMENT

Veritext Legal Solutions represents that the foregoing transcript is a true, correct and complete transcript of the colloquies, questions and answers as submitted by the court reporter. Veritext Legal Solutions further represents that the attached exhibits, if any, are true, correct and complete documents as submitted by the court reporter and/or attorneys in relation to this deposition and that the documents were processed in accordance with our litigation support and production standards.

Veritext Legal Solutions is committed to maintaining the confidentiality of client and witness information, in accordance with the regulations promulgated under the Health Insurance Portability and Accountability Act (HIPAA), as amended with respect to protected health information and the Gramm-Leach-Bliley Act, as amended, with respect to Personally Identifiable Information (PII). Physical transcripts and exhibits are managed under strict facility and personnel access controls. Electronic files of documents are stored in encrypted form and are transmitted in an encrypted fashion to authenticated parties who are permitted to access the material. Our data is hosted in a Tier 4 SSAE 16 certified facility.

Veritext Legal Solutions complies with all federal and State regulations with respect to the provision of court reporting services, and maintains its neutrality and independence regardless of relationship or the financial outcome of any litigation. Veritext requires adherence to the foregoing professional and ethical standards from all of its subcontractors in their independent contractor agreements.

Inquiries about Veritext Legal Solutions' confidentiality and security policies and practices should be directed to Veritext's Client Services Associates indicated on the cover of this document or at www.veritext.com.